
ENVIRONMENTAL PROTECTION

WATERSHED MANAGEMENT

Stormwater Management

Proposed Repeal and New Rules:	N.J.A.C. 7:8
Proposed Amendments:	N.J.A.C. 7:7A-9.2, N.J.A.C. 7:7E-8.7, N.J.A.C. 7:13-2.8, N.J.A.C. 7:15-3.4 and 3.5, N.J.A.C. 7:20-1.3
Authorized by:	Bradley M. Campbell, Commissioner Department of Environmental Protection
Authority:	N.J.S.A. 12:5-3; 13:1D-1 et seq.; 13:9A-1 et seq.; 13:19-1 et seq.; 40:55D- 93 to 99; 58:4-1 et seq.; 58:10A-1 et seq.; 58:11A-1 et seq.; and 58:16A-50 et seq.
Calendar Reference:	See Summary below for explanation of exception to calendar requirement
DEP Docket Number:	__ - 02 - ___ / ___
Proposal Number:	PRN _____

Public hearings concerning this proposal will be held at the following time and locations:

Submit written comments by to:

Gary J. Brower, Esq.
Attn: DEP Docket Number
Office of Legal Affairs
NJ Department of Environmental Protection

PO Box 402

Trenton, NJ 08625- 0402

The Department of Environmental Protection (Department) requests that commentors submit comments on diskette as well as on paper. The Department prefers Microsoft word 6.0 or above; however, other word processing software that can also be read or used by Microsoft Word 6.0 is acceptable. MacIntosh formats should not be used.

Comments should be identified by the applicable N.J.A.C. citation, and comments related to the summary description of a particular rule section should be included with comments on that section. Since comments will be sorted electronically, the following format should be used for each comment to the extent practicable:

(tab)citation(tab)Comment: Organization name (or individual name for an individual not representing an organization) followed immediately with the phase "believes that" and comment text. For example:

7:8-1.1 Comment: ABC organization believes that the definition of "stormwater management facility" should also include outlet structures.

The agency proposal follows:

Summary

The Department is proposing to repeal and replace with new rules the Stormwater Management rules at N.J.A.C. 7:8. The Department is also proposing amendments of the stormwater management provisions of the following rules in order to coordinate with and cross-reference the new Stormwater Management rules: the Freshwater Wetlands Protection Act Rules at N.J.A.C. 7:7A; the Coastal Zone Management rules at N.J.A.C. 7:7E; the Flood Hazard Area Control rules at N.J.A.C. 7:13; the Water Quality Management Planning rules at N.J.A.C. 7:15; and the Dam Safety Standards at N.J.A.C. 7:20.

The proposed new rules are the first major update to the Stormwater Management rules since they were first adopted in 1983. The Stormwater Management Rules govern the development of standards for State, municipal and regional stormwater management requirements, plans and ordinances. Pursuant to the Stormwater Management Act, N.J.S.A. 40:55D - 93 to 99, every municipality in the State is required to prepare a stormwater management plan and a stormwater management ordinance(s) to implement that plan.

The link between anthropogenic disturbance and changes in aquatic community structure has been consistently documented over the past decade. Land use alterations resulting in an increase in impervious surfaces, runoff, suspended sediments and pollutant loading directly affect the hydrology, geomorphology, and water quality of streams, rivers, lakes and marine waters, and alter the aquatic communities that inhabit these systems. Studies of many New Jersey watersheds suggest that forest and wetlands play a major role in maintaining a healthy supply of water, food, and habitat for intolerant and highly desirable species, and at the same time, mitigate the undesirable affects of other human-induced landscape alterations (Ayers and others, 2000: Chang and others 1999; Kennen, 1999; Kennen and Kurtenbach, in review and available from the Department). Urban land use, in particular, has been directly linked to a shift in communities to species more tolerant of hydrology, chemical, organic, and habitat changes brought on by increases in chemical use, impervious surface area, surface runoff, and instability of stream habitat. The pressures of urban development on aquatic communities have been and will continue to present many challenges in New Jersey's efforts to meet the goals of the Federal Clean Water Act, 33 U.S.C. 1251 et seq., the New Jersey Water Pollution Control Act, N.J.S.A. 58:10-1 et seq., and the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq.

The Department's approach to protecting and restoring water resource health will focus on protecting specific environmentally sensitive and critical areas while encouraging continued growth in appropriate areas of the State. The Department intends to prevent the loss and encourage restoration of environmentally critical areas such as forests, wetlands and stream corridors to moderate the effects of development and provide improved habitat for plants and animals. The

Department is pursuing a closer linkage and integration of land-use planning and regulation with water resource health and the factors that impact it. While the major emphasis of this proposal improves minimum statewide runoff techniques, the Department has also begun in this proposal to address the need for special protection measures necessary to protect environmentally sensitive waters and land areas.

An objective of this proposal is to significantly improve the performance objectives and methods of mitigating the adverse impacts of post-construction stormwater runoff in New Jersey. The new rules require stormwater runoff control techniques that are consistent with the Department's water resource strategy and smart growth objectives because these rules:

- Provide a framework and incentives for managing runoff and resolving nonpoint source impairment on a drainage area basis for new and existing development.
- Establish a hierarchy for measures: first, integrate low impact site design techniques to maintain natural vegetation and drainage, next evaluate if performance standards are met, then incorporate structural best management practices as necessary.
- Establish new runoff control performance standards for ground water recharge, water quality and water quantity.
- Establish special area protection measures for pristine and exceptional value waters.
- An updated New Jersey Stormwater Best Management Practices (NJ BMP) Manual is being made available to provide guidance on how to meet the performance standards. The manual is available on the Department's web page at http://www.njstormwater.org or www.njnonpointsource.org or in hard copy by calling (609)633-1441.
- Provide regulatory consistency among regulatory agencies at the local and State level.
- Provide safety standards for stormwater management basins.

The Department anticipates implementation of these rules for new development and redevelopment through a number of programs as follows:

- This proposal is a part of the Department’s Stormwater Regulation Program being proposed concurrently to implement the requirements of Federal National Pollution Discharge

Elimination System, Phase II Stormwater Permit rules published elsewhere in today's Register. Under 40 CFR 122.34(b)(5), owners or operators of "regulated small municipal separate storm sewer systems" are required to "develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that result in land disturbance of greater than or equal to one acre and that discharge into [the] municipal separate storm sewer system." See generally, 64 Federal Register 68722; December 8, 1999. Elsewhere in this issue of the New Jersey Register, the Department is proposing amendments to the New Jersey Pollutant Discharge Elimination System Rules to incorporate the Federal program and these revised Stormwater Management Rules N.J.A.C. 7:8. The Phase II, Stormwater Regulation program will authorize New Jersey Pollution Discharge Elimination System Permits for all municipalities, counties, major road facilities and public complexes. Additional information on this program is available in this register and on the Department's website at www.njnonpointsource.org or www.njstormwater.org.

- The New Jersey Department of Community Affairs, Residential Site Improvement Standards at N.J.A.C. 5:21-7 incorporate these stormwater standards by reference.
- The Department's Land Use Regulation Program will apply these standards through the Flood Hazard Area Control rules, the Coastal Zone Management rules, the Freshwater Wetlands Protection Act rules and the Dam Safety Standards.
- The Department's Water Quality Management Planning Program will apply these standards through environmental reviews as part of the Water Quality Management Planning Process.

The Department has documented the importance of managing stormwater runoff and minimizing nonpoint source pollution through its water quality monitoring and assessment programs. An indicator of water resource health for which significant data has been collected are populations of aquatic insects larvae and other organisms that live in stream beds (also know as benthic macroinvertebrate). Over 800 stations in New Jersey streams and rivers are sampled for benthic macroinvertebrate health once every 5 years. Published results show that approximately 35% of the sites were not impaired while the remainder show moderate or severe impairment. The data is published by the Department's Water Monitoring Management Program at

www.state.nj.us/dep/watershedmgt.

Stormwater runoff from developed land uses is suspected to be a leading cause of macroinvertebrate impairment. A recent USGS report "Relation of Environmental Characteristics To the Composition of Aquatic Assemblages Along a Gradient of Urban Land Use in New Jersey, 1996–98" documented the relationship between the ecological health of New Jersey streams and drainage area characteristics. The study showed that the ecological health of our streams as represented by macroinvertebrates, fish and algae is related to the level of drainage area urbanization. The negative impacts could be mitigated best by conserving landscape conditions and incorporating stormwater management practices such as ground water recharge and preservation of existing forests, wetlands and riparian corridors.

The proposed performance standards in this rule are intended to significantly improve runoff management in New Jersey by recognizing that stormwater is a valuable resource, that, wherever possible, should be managed by techniques that mimic nature and avoid the concentration of runoff from impervious surfaces. Traditionally, stormwater management has focused on removing stormwater as quickly as possible to avoid flooding and ponding. Traditional methods of managing runoff often lead to detrimental impacts to groundwater resources, surface water resources, habitat and public and private property. The intent of this rule proposal is to require implementation, where development of land is to occur, of the best currently available methods for preventing hydrologic and water quality impacts of stormwater on streams and other waters including impacts on ecological functions and wildlife. This can be accomplished, first and foremost, by better site design techniques that prevent disturbances through use of nonstructural stormwater strategies or low impact site design to minimize modification to hydrologic conditions.

The proposed design and performance standards are intended to reduce stormwater runoff volume, reduce erosion, and maintain infiltration and groundwater recharge. The design and performance standards require site designs, that to the maximum extent practical, that maintain or

reproduce as closely as possible natural drainage systems, vegetation and hydrologic response, and/or eliminate or minimize the discharge of stormwater-related pollutants. The new groundwater recharge performance standard is intended to protect baseflow, stream ecology, and geomorphology while encouraging the preservation and enhancement of environmentally beneficial areas by maintaining or mimicking existing hydrologic conditions.

The Department believes that, in many instances, stormwater measures for specific drainage areas are best developed through regional stormwater management plans and for waterbody specific impairments or objectives. The Department believes that in the long term, targeted stormwater controls on a regional or drainage area basis will result in more effective management of stormwater runoff from new and existing development at lower total cost than can be achieved by implementing standard statewide site-specific stormwater controls alone. The Department is providing the public with an array of stormwater management techniques through this rule and the NJ BMP Manual. However, the selection of the most appropriate BMPs, after the implementation of nonstructural strategies, to meet the water quality, water quantity and groundwater recharge objectives of this chapter is primarily a local decision. Regional stormwater management plans are also intended to be a part of the Department's overall effort to protect and remediate waters.

Public Input/Rule Making History

The Department made a significant effort in developing the Stormwater rule and NJ BMP Manual to involve interested members of the public, representatives of environmental groups, developers, municipalities, counties, regional agencies, consultants as well as the New Jersey Department of Agriculture, the New Jersey Department of Transportation and the New Jersey Department of Community Affairs. In 1992, the Department published a notice inviting comment on the general concepts and strategies that might be incorporated into the Stormwater Management rules to shift the focus from individual on-site stormwater controls to regional or drainage area strategies that take into consideration both water quality and water quantity impacts. (see Notice of Opportunity for Public Input on Stormwater and Nonpoint Source Pollution Control, 24 N.J.R. 4470(a);

December 21, 1992). Based on the comments received as well as subsequent public working sessions held at Mercer County Park on August 13 and December 16, 1993, the Department developed and released for comment draft rules regarding regional stormwater management (see Notice of Opportunity for Public Comment on Draft Stormwater Management Rules, 29 N.J.R. 732(a); March 3, 1997). The Department received comments from other State entities, environmental groups, business interests, builder's representatives, professional associations, county agencies, and private citizens. The comments received on the draft rules were generally supportive of the regional stormwater management planning strategy. Concerns that were raised focused mainly on the financial and administrative logistics of developing and implementing regional plans.

An additional round of comments on the draft rules was solicited and received from a variety of stakeholders including environmental groups, watershed partners, builders association representatives, consultants, municipal engineers, and other State agency representatives. The most significant concerns included the following:

1. The rule should integrate clearly with the water quality planning process and watershed management planning efforts;
2. Coordination between this rule and the Residential Site Improvement Standards is necessary;
3. Stormwater should be managed through regional stormwater management plans;
4. Resources should be made available for these plans;
5. Some commentors did not understand portions of the new groundwater recharge performance standard and believed a waiver from this performance standard should exist; and
6. Some commentors wanted certain definitions and terms to be added and/or further defined.

The Department believes the comments and recommendations are reflected in this rule proposal. The Department acknowledges and appreciates the efforts made by those parties providing input in shaping this rule proposal. The proposed rules include clear coordination and cross-references in the proposed Subchapter 3, Regional Stormwater Management Plans to Water Quality Management Plans, an urban redevelopment waiver in the groundwater recharge

performance standard to allow for circumstances where recharge is not feasible, and definition and terminology modifications. In addition, comments encouraged the Department to address increases in runoff volume that occur through increases in impervious cover, loss of groundwater recharge and loss of evapotranspiration.

Stormwater Management rules

Subchapter 1. General Provisions

General

This proposed subchapter contains general provisions that pertain to the proposed Stormwater Management rules as a whole, including provisions concerning the scope and purpose of the rules, definitions, program information, severability, and the relationship of the proposed stormwater management rules to other regulatory programs.

N.J.A.C. 7:8-1.1 Scope and purpose

This proposed section, which replaces existing N.J.A.C. 7:8-1.1, sets forth the scope and purpose of the proposed Stormwater Management rules. This section is substantially rewritten to outline what the proposed rules establish, including general requirements for stormwater management plans and stormwater control ordinances; content requirements and procedures for the adoption and implementation of regional stormwater management plans and municipal stormwater management plans; design and performance standards for stormwater management measures; and safety standards for stormwater management basins.

N.J.A.C. 7:8-1.1 includes citations to statutes impacted by this chapter. N.J.A.C. 7:8-1.1(b) lists statutes under which stormwater planning and ordinance(s) are conducted including the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., the Water Pollution Control Act, N.J.S.A.

58:10A-1et seq., the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., and the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq. Proposed N.J.A.C. 7:8-1.1(b) provides cross references to the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq., the Coastal Area Facility Review Act, N.J.S.A. 13:19-1 et seq., the Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq., the Waterfront Development Law, N.J.S.A. 12:5-3, the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq. and the Dam Safety Act, N.J.S.A. 58:4-1 et seq., because the proposed amendments to the rules implementing those statutes will require the use of design and performance standards established under the Stormwater Management rules.

N.J.A.C. 7:8-1.2 Definitions

The following definitions are included in proposed N.J.A.C. 7:8-1.2.

Agricultural development: This definition is being carried over from the existing definition at N.J.A.C. 7:8-1.3. Agricultural development continues to be defined to mean land uses associated with the production of food, fiber and livestock for sale. The definition continues to make clear that other agricultural operations such as development for processing or sale of food or manufacturing operations related to agriculture are not considered agricultural development for the purposes of this chapter. The definition of this term is proposed for modification to delete unnecessary words that do not change the substance of the definition.

CAFRA Center, Core or Node: This is a new definition that references the terms pursuant to N.J.A.C. 7:8-5B.3.

Compaction: This is a new definition that means a soil condition that should be avoided as a nonstructural strategy. Compaction means the increase in soil bulk density by compression that can generally negatively impact groundwater recharge.

Core: This is a new definition that means a pedestrian-oriented area of commercial and

civic uses serving the surrounding municipality, generally including housing and access to public transportation as designated by the State Planning Commission.

County review agency: This is a new definition that means the county agency that approves, conditionally approves, or disapproves municipal stormwater management plans and implementing ordinances. Under N.J.S.A. 40:55D-97, such a county agency may be either a county planning agency or a county water resources association created pursuant to N.J.S.A. 58:16A-55.5.

Designated Center: This is a new definition that means a State Development and Redevelopment Plan Center that has been officially recognized as such by the State Planning Commission such as urban, regional, town, village or hamlet.

Design engineer: This is a new definition that means the person who designs stormwater management measures and prepares a maintenance plan for those measures. A design engineer must be a New Jersey - licensed professional engineer.

Development: This is a new definition that means the division of land, construction activities, excavation activities, land fill activities, changes in land or structure use which requires approval pursuant to the Municipal Land Use Law. The term development is used throughout the Stormwater Management rules. This definition is based on the definition of "development" in the Municipal Land Use Law at N.J.S.A. 40:55D-4.

Drainage area: This is a new definition that means a geographic area within which water, sediments, and dissolved materials drain to a particular receiving water body or to a particular point along a receiving waterbody. Such a point may be a natural feature such as a confluence with a tributary, or an artificial feature such as a political boundary or drinking water treatment plant intake. The definition of "drainage area" is intended to allow a regional stormwater management plan to be developed for one or more entire "drainage areas" whose extent is suited to the

jurisdictional boundaries and stormwater management priorities of the area for which the plan is being developed.

Environmentally constrained area: This is a new definition that means areas where the physical alteration of the land is in some way restricted, including but not limited to; wetlands, floodplains, threatened and endangered species sites or designated habitats, preserved agricultural lands and parks and preserves. Environmentally constrained areas must be identified as part of a regional stormwater management planning process.

Environmentally critical area: This is a new definition that means areas or features that are of significant importance to the environment, but may not be regulated to the degree of environmentally constrained areas. These areas are integrally related to the maintenance, enhancement or protection of water and other natural resources such as riparian corridors; natural heritage priority sites; habitats of threatened or endangered species; large areas of contiguous open space or upland forest; steep slopes; and important aquifer recharge areas. This definition is a modification of an existing definition in the rules for Financial Assistance Programs for Environmental Infrastructure Facilities (N.J.A.C. 7:22-10.2). Environmentally constrained areas must be identified as part of a regional stormwater management planning process.

Empowerment Neighborhoods: This is a new definition that means those neighborhoods designated by the Urban Coordinating Council "in consultation and conjunction with" the New Jersey Redevelopment Authority pursuant to N.J.S.A. 55:19-69.

Erosion: This new definition is added to define a term used in various Stormwater Management rule provisions and is based on the definition of "erosion" in the Municipal Land Use Law at N.J.S.A. 40:55D-4 and in the Soil Erosion and Sediment Control Act at N.J.S.A. 4:24-41.e.. Erosion is defined to include detachment and movement of soil or rock by natural forces of water, wind, and gravity.

Impervious surface: This definition replaces the existing definition at N.J.A.C. 7:8-1.3 and means a surface covered with material that has made the surface highly resistant to infiltration by water. The proposed definition is similar to the definition of “impervious surface” in the Residential Site Improvement Standards at N.J.A.C. 5:21-1.4. The definition recognizes that some surfaces commonly referred to as "impervious" for stormwater management purposes do allow some minor groundwater recharge (for example, through pavement cracks).

Infiltration: Infiltration is the process by which precipitation seeps into the soil.

Lead planning agency: This is a new definition that means the stormwater management planning agency (or agencies) that is selected by the regional stormwater management committee to act as the primary contact for the development of the regional stormwater management plan. Note that under this definition, it is possible for two or more stormwater management planning agencies to jointly act as the "lead planning agency" developing a regional stormwater management plan.

Major development: This definition replaces the definition at N.J.A.C. 7:8-1.3. The cross reference in the existing N.J.A.C. 7:8-1.3 definition to "the definition of development in the Municipal Land Use Law, N.J.S.A. 40:55D-4" is no longer necessary because the definition of development has been added.

The existing definition of "major development" provides that it is development which will "cover one or more acres of land with additional impervious surfaces”. The proposed definition provides that “major development” is development "ultimately disturbing one or more acres of land or increasing impervious surface by more than one-quarter acre." Increasing impervious surface by more than one-quarter acre is added to continue the current threshold of stormwater review for special areas of the State regulated in the Department’s Land Use Regulation Program. However, for the purposes of developing municipal stormwater plans, major development will be based upon disturbance of one or more acres of land but not increases in impervious cover by more than one

quarter acre see proposed N.J.A.C. 7:8-4.2. The "ultimately disturbing one or more acres of land" threshold is required of municipal stormwater ordinances so these ordinances can serve as the post-construction stormwater management requirement for the Department's Stormwater Regulation Program which will implement the requirements of NPDES, Phase II Stormwater Permitting rules proposed elsewhere in today's Register.

Paragraph 2 of the existing definition of "major development" identifies construction of certain uses as "major development" because of the pollutants that may be discharged in stormwater as a result of those uses. The proposed new definition does not include similar language because stormwater pollutant loadings that are attributable to specific practices associated with those uses are regulated under other rules or statutes such as the New Jersey Pollutant Discharge Elimination System rules (N.J.A.C. 7:14A), animal waste management statutes (N.J.S.A. 4:27-19 and N.J.S.A. 4:9-38), rules concerning Discharge of Petroleum and Other Hazardous Substances (N.J.A.C. 7:1E), the Solid Waste rules (N.J.A.C. 7:26), the Hazardous Waste rules (N.J.A.C. 7:26G), the Soil Erosion and Sediment Control Act (N.J.S.A. 4:24-39 et seq.), and the Atomic Energy Act of 1954, (42 U.S.C. 2011 et seq.). If development reflected on the site plan or subdivision plan for those uses would ultimately disturb one or more acres of land or increase impervious surfaces by more than one-quarter acre, then that development would still fall under the definition of "major development." Disturbance is defined within the definition of major development to mean the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting or removing of vegetation.

Projects undertaken by any government agency which ultimately disturb one or more acres of land or increase impervious surface by more than one-quarter acre, but which do not require approval under the Municipal Land Use Law, are also considered "major development."

Municipality: This is a new definition that means any city, borough, town, township, or village.

Node: This is a new definition that means a concentration of facilities and activities which are not organized in a Compact form as recognized by the State Planning Commission. Compact means a pattern of land development with sufficient density of development and proximity between uses and activities to encourage pedestrian movement and efficient provision of public facilities and services.

Nutrient: This definition is added to define a term used in N.J.A.C. 7:8-3.4 and N.J.A.C. 7:8-5. A “nutrient” under the proposed definition is a chemical element or compound essential to the development of an organism. This definition is based on the definition of "nutrient" in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.4.

Person: This is a new definition that means any individual, corporation, company, partnership, firm, association, political subdivision of this State, any state or interstate agency or a Federal agency. This definition is based on the first sentence of the definition of "person" in the Water Pollution Control Act at N.J.S.A. 58:10A-3.1, except for the omission of the words "owner or operator of a treatment works," which are not necessary for purposes of N.J.A.C. 7:8 and the addition of federal agencies.

Pollutant: This is a new definition that means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, agricultural, and construction waste or runoff or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. "Pollutant” includes both hazardous and nonhazardous pollutants. This definition is based on the definition of “pollutant” in the NJPDES rules at N.J.A.C. 7:14A-1.2.

Recharge: This is a new definition that means the amount of water from precipitation that

infiltrates into the ground and is not evapotranspired.

Sediment: This is a new definition that means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion. This definition is the same as the definition of “sediment” in the Soil Erosion and Sediment Control Act at N.J.S.A. 4:24-41.h.

Site: This is a new definition that means the lot or lots upon which a major development is to occur or has occurred.

Soil: This is a new definition that means all unconsolidated mineral and organic material of any origin. This definition is the same as the definition of "soil" in the Soil Erosion and Sediment Control Act at N.J.S.A. 4:24-41.i.

State Development and Redevelopment Plan Metropolitan Planning Area (PA1): This is a new definition that means an area delineated on the State Plan Policy Map that is intended to be the focus for much of the state’s future redevelopment and revitalization efforts.

Stormwater: The existing definition of "storm water runoff" is modified to separate the term "stormwater" from "stormwater runoff" to define "stormwater" for the many instances where the Stormwater Management rules use the term "stormwater" without using the term "stormwater runoff."

Stormwater runoff: This definition replaces the definition at N.J.A.C. 7:8-1.3 and means water flow on the surface of the ground or in storm sewers, resulting from precipitation. The definition of this term in the existing rules is modified to make it clear that the word "flow" in this definition refers to water flow, and that water flow resulting from precipitation is "stormwater runoff" even if such water flow is in a storm sewer (which may be beneath the surface of the ground) rather than on the surface of the ground.

Stormwater management basin: This is a new definition that an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), be planted mainly with wetland vegetation (most constructed stormwater wetlands). This definition replaces the existing definition of "detention basin" at N.J.A.C. 7:8-1.3. In the existing Stormwater Management rules, the term "detention basin" refers to a broad range of impoundments, including infiltration basins and wet ponds that retain stormwater runoff. In the proposed Stormwater Management rules, "stormwater management basin" is the general term for all such impoundments (including most constructed stormwater wetlands). As indicated in the definition of "stormwater management basin," the proposed Stormwater Management rules use the term "detention basin" for only one kind of stormwater management basin (the kind that is normally dry but that is not an infiltration basin).

Stormwater management measure: This is a new definition that means any structural or nonstructural method intended to control or reduce stormwater runoff. Stormwater management measure additionally includes measures to eliminate illicit or illegal nonstormwater discharges into stormwater conveyances or to promote the control or reduction of stormwater runoff. Control or reduction of stormwater runoff includes control or reduction of the quantity of stormwater runoff (for example, control or reduction of runoff volume, rate, or velocity), control or reduction of one or more pollutants in stormwater runoff (or of other characteristics of stormwater runoff that affect receiving water quality), or both.

Not all water flow in a stormwater conveyance is necessarily "stormwater runoff" as defined in proposed N.J.A.C. 7:8-1.2. At least part of the time, some stormwater conveyances transport, legally or illegally, water flows that are not immediately derived from precipitation and that at a particular time may or may not be mixed with stormwater runoff. Some examples of "non-stormwater" flows commonly found in stormwater conveyances are listed in 40 CFR 122.26(d)2)(iv)(B)(1). Nevertheless, the problem of illicit or illegal nonstormwater discharges into

stormwater conveyances is so closely related to stormwater runoff control that the definition of "stormwater management measures" includes methods to eliminate such discharges. The Department's Stormwater Regulation Program requires action to eliminate illicit or illegal nonstormwater discharges.

Stormwater management planning area: This is a new definition that is used in various Stormwater Management rule provisions to refer to a geographic area for which a stormwater management planning agency is authorized to prepare stormwater management plans, or a specific portion of that area, identified in a stormwater management plan prepared by that agency. The "specific portion of that area" could be, for example, one or more drainage areas.

Tidal Flood Hazard Area: This is a new definition that means a flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

Urban Coordinating Council Empowerment Neighborhood: This is a new definition that means the neighborhoods given priority access to state resources through the New Jersey Redevelopment Authority.

Urban Enterprise Zones: This is a new definition that means those areas designated by the New Jersey Urban Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et seq.

Urban redevelopment area: In order to minimize suburban sprawl, this term is included to encourage redevelopment in cities or settlements that have relatively high population density and mixed land uses, have a relatively high percentage of impervious cover, most often have a fully developed storm, sanitary and water supply infrastructure network, and also often serve as the primary focus for commercial, industrial, office and residential uses in the region. These areas are generally consistent with the areas defined within the State Development and Redevelopment Plan

as Metropolitan Planning Areas (PA1), Designated Centers, Cores and Nodes and Urban Enterprise Zones and Urban Coordinating Council Empowerment Neighborhoods. The Metropolitan Planning Area was delineated as part of a collaborative process between State, regional and local governments, and the public that considered the plans and maps of State agencies, municipal, county and regional entities. These plans and maps proved detailed information on the extent and location of urban lands, impervious cover, population and housing, infrastructure location, and other information that provided the basis for delineating those areas of the State that are currently highly developed and have been provided with enormous public investment in urban infrastructure systems and public transportation facilitates. Most of these areas and the communities within them are fully developed or almost fully developed, with little available vacant land. Most of the change in future land uses will take the form of redevelopment. The Metropolitan Planning Area boundary was the subject of a public review process, as well as extensive public hearings in local and state forums. The Metropolitan Planning Area was delineated with criteria that included areas with:

(1) Densities of more than 1,000 persons per square mile;
(2) Existing public water and sewer systems,
(3) Adjacent to the Suburban Planning Area;
(4) Land area greater than on square mile; and
(5) A population of not less than 25,000 people.

Designated Centers, Cores, and Nodes are also the result of a detailed planning process and public review with local governments, State agencies and the public, and represent a detailed representation of a specific area's current and future development and redevelopment plans, as well as existing infrastructure capacity and the ability to accomplish projected growth and development.

The Department has reviewed the process that was used to delineate the metropolitan planning area and to designate centers on the state plan policy map and determine that the boundaries as described above are appropriate to employ as the basis for limiting the geographic scope of the waiver for groundwater recharge. The Department notes that as a State Agency member of the State Planning Commission, it has been an active participant in the development of the State Development and Redevelopment Plan and the State Plan Policy Map, and voted to

approve the boundaries that make up the current map. The Department also provided significant data for the development of the map such as aerial photography, wetlands, open space, steep slopes, Category One waters, Sewer and Water supply infrastructures, aquifer recharge areas and endangered and threatened species habitat mapping.

The Department is also including in the definition of urban redevelopment the term "CAFRA Center, Core and Node" because these areas have undergone the State Plan Commission designation process and have been reviewed and approved by the Department and found to be consistent with CAFRA.

This definition also includes Urban Coordinating Council Empowerment Neighborhoods and Urban Enterprise Zones. Urban Coordinating Council Empowerment Neighborhoods are located in the State's urban communities, and are neighborhood-based economic development and human resource-based efforts to revitalize communities. Urban Coordinating Council Empowerment Neighborhoods are delineated through a public process that includes citizens, community groups, developers and businesses. Similarly, Urban Enterprise Zones are delineated through a public process based on existing and planned development locations, intended to stimulate job creation in economically distressed areas in the State. These areas are generally urban in character and are included in this definition to encourage redevelopment of these areas.

Waters of the State: "Waters of the State" is defined to mean the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction. This definition of is based on the definition of "waters of the State" in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.4.

Wetlands or wetland: This is a new definition that means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life

in saturated soil conditions, commonly known as hydrophytic vegetation. This definition is based on the first sentence in the definition of "wetlands" in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.4 and the definition in the Freshwater Wetlands Rules at N.J.A.C. 7:7A.

N.J.A.C. 7:8-1.3 Program information

This section continues existing N.J.A.C. 7:8-1.5 and is updated to provide that questions concerning the Stormwater Management rules should be directed to the Department's "Nonpoint Source Program" within the Watershed Management Division. This is also the address to be used for any filings required under the proposed rules.

N.J.A.C. 7:8-1.4 Severability

This section, which continues existing N.J.A.C. 7:8-1.6, provides that if any part of the Stormwater Management rules is judged invalid by a court, such order or judgment shall not affect or invalidate the remainder of those rules.

N.J.A.C. 7:8-1.5 Relationship to other regulatory programs

N.J.A.C. 7:8-1.5(a) is intended to recognize that, while the Department is attempting to provide uniform stormwater management measures generally applicable to multiple regulatory programs, the Department retains the ability to require any additional measures necessary to implement a particular program.

N.J.A.C. 7:8-1.5(b) recognizes that a stormwater management measure used as a soil erosion or sediment control measure is also subject to the Soil Erosion and Sediment Control Act,

N.J.S.A. 4:24-39 et seq. As the standards for soil erosion and sediment control at N.J.A.C. 2:90-1.3 and N.J.A.C. 16:25A-2.1 make clear, many stormwater management measures besides detention basins are used as soil erosion and sediment control measures. The Soil Erosion and Sediment Control Act and implementing rules also apply to those stormwater management measures. N.J.A.C. 7:8-1.5 (c) provides a cross-reference to the Residential Site Improvement Standards which refer to the Department's Stormwater Management rules.

Subchapter 2. General Requirements for Stormwater Management Planning

General

This subchapter contains general requirements which pertain to all stormwater control ordinances and stormwater management plans, including regional stormwater management plans developed under Subchapter 3 and municipal stormwater management plans developed under Subchapter 4.

N.J.A.C. 7:8-2.1: Scope

As described in the summaries of the component sections of Subchapter 2 below, this subchapter contains general requirements for stormwater management plans and stormwater control ordinances, including conformity with relevant statutes and rules, coordination with other stormwater management plans and the goals of stormwater management planning. In this regard, proposed Subchapter 2 consolidates and revises several requirements in existing Subchapters 2 and 3, and makes it clear that the requirements of proposed Subchapter 2 apply to all stormwater management plans and stormwater control ordinances.

N.J.A.C. 7:8-2.2: Goals of stormwater management planning

Proposed N.J.A.C. 7:8-2.2 establishes the goals of stormwater management planning. The proposed stormwater management planning goals are;

1. Reduce flood damage, including damage to life and property;
2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;
3. Reduce soil erosion from any development or construction project;
4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
5. Maintain groundwater recharge;
6. Prevent, to the greatest extent feasible, an increase in nonpoint pollution;
7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;
8. Minimize pollutants in stormwater runoff from new and existing development and government projects in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water;
9. Protect public safety through the proper design and operation of stormwater management basins.

Proposed N.J.A.C. 7:8-2.2(a)1 through (a)7 closely corresponds to the statutory language at N.J.S.A. 40:55D-95.a through g. The goal for groundwater recharge is for it to be maintained to be consistent with the proposed provision at N.J.A.C. 7:8-5.4. Increases in stormwater runoff from a new development site are to be minimized to the extent practical as a goal at proposed N.J.A.C. 7:8-2.2(a)2. In regard to (a)7, N.J.S.A. 40:55D-95.d refers to bridges and culverts; however, N.J.S.A. 40:55D-95 also requires stormwater management plans to include other provisions necessary to manage stormwater and reduce flood damage.

Proposed N.J.A.C. 7:8-2.2(a)8 reflects the objective of the Water Pollution Control Act at N.J.S.A. 58:10A-2 and the Water Quality Planning Act at N.J.A.C. 58:11A-2 to restore, enhance and maintain the chemical, physical and biological integrity of the waters of the State.

Proposed N.J.A.C. 7:8-2.2(a)9 recognizes that stormwater management plans and their implementing ordinances should be designed to protect public safety through the proper design and operation of stormwater management basins. This provision is based on N.J.S.A. 40:55D-9.5h.

N.J.A.C. 7:8-2.3 Stormwater Management Planning Agencies

This section contains a list of the entities that that may prepare stormwater management plans provided the entity is authorized to do so under their enabling legislation.

N.J.A.C. 7:8-2.4 Stormwater Management Plan Requirements

This section contains stormwater management plan requirements that apply to regional, county, municipal or other stormwater management plans and ordinances.

Through compliance with Subchapter 3 for regional stormwater management plans and Subchapter 4 for municipal stormwater management plans, all stormwater management plans will be required to provide at least as much protection from stormwater-related water quantity and water quality impacts of new major development as would be provided under Subchapter 5. Proposed N.J.A.C. 7:8-2.4(d) requires that a stormwater management plan and implementing ordinances be designed to protect public safety through the proper design and operation of stormwater management basins. Specific requirements to assure protection of public safety are contained at proposed N.J.A.C. 7:8-6.

Proposed N.J.A.C. 7:8-2.4(e) requires that in developing a stormwater management plan and identifying appropriate stormwater management measures thereunder, each stormwater

management planning agency shall take into consideration the physical character of and ecological resources in its stormwater management planning area. It is important that all plans take into account all characteristics of the planning area, both positive and negative, to assure that the plan when implemented will be successful.

Proposed N.J.A.C. 7:8-2.4(f) requires that all stormwater management plans and ordinances shall be coordinated with any other stormwater management plans related to the same river basins or drainage areas is necessary in order to ensure consistency of the stormwater management strategies to be employed in areas covered by more than one stormwater management plan. The requirement that regional and municipal plans for the same area be consistent is reflected throughout the chapter (see for example proposed N.J.A.C. 7:8-4.2(b) and N.J.A.C. 7:8-4.3(e)). This provision is derived from N.J.S.A. 40:55D-94. Proposed N.J.A.C. 7:8-2.4(f) uses the term "drainage area" as well as "river basin" because a "drainage area" may be a whole river basin, a portion of a river basin, or may contain lands that might not be considered to be within any river basin (for example, lands draining directly to a bay or the ocean).

7:8-2.5 Exemptions

At proposed N.J.A.C. 7:8-2.5 a municipality may petition for an exemption to the requirements of this chapter by submitting documentation to demonstrate that, if granted, the exemption will not result in an increase in flood damage, water pollution or constitute a threat to the public safety.

Subchapter 3

General

This proposed subchapter establishes requirements specifically for regional stormwater management planning. As noted earlier in this summary, the Department believes that regional stormwater management planning will result in more effective management of new and existing stormwater runoff quantity and quality than can be achieved by implementing site-specific

stormwater controls on a site-by-site basis. Accordingly, the Department encourages the development of regional stormwater management plans under Subchapter 3.

Regional Stormwater Management Plans are being proposed as an alternative and preferable method of runoff control because of the technical and administrative solutions available, including the following:

1. Identification of drainage area-specific technical standards for stormwater runoff quantity that may reduce the need for structural solutions currently required on nearly every site;

2. Emphasis on the use of natural and entire drainage systems, and creating new structural drainage systems only when natural drainage systems would be inadequate;

3. Opportunities to tailor the level of stormwater runoff quantity, groundwater recharge and quality control for new and existing development to the characteristics of the drainage area and receiving waterbody;

4. The development and implementation of the stormwater portion of a Total Maximum Daily Load (TMDL) is facilitated. (See N.J.A.C. 7:15-7 concerning development of a TMDL);

5. Development of regional stormwater management plans and models will aid in the identification of priority open space area for acquisition;

6. Improved government coordination will result from drainage area measures that are consistently developed and implemented by all levels of government throughout the drainage area;

7. Regulatory incentives have been established for the implementation of regional stormwater management plans in the New Jersey Department of Agriculture, Soil Erosion and Sediment Control Standards; the New Jersey Department of Community Affairs, Residential Site

Improvement Standards; and the Department's Flood Area Hazard Control Act rules and Coastal Zone Management rules. Upon development and approval of a regional stormwater management plan, drainage area-specific design and performance standards supercede statewide minimum standards for flood, erosion and water quality.

N.J.A.C. 7:8-3.1 Scope

Proposed N.J.A.C. 7:8-3.1 sets forth the scope of Subchapter 3. This subchapter describes stormwater management planning and implementation at the drainage area level, including plan elements; planning process; regional management planning area characterization; development of drainage area-specific objectives and standards; selection of stormwater management measures; strategy for implementing the measures and evaluating the effectiveness of the regional stormwater management plan; plan review, adoption, amendment or revision; and implementation and periodic evaluation of the plan. The description of the regional stormwater management planning and implementation process in this subchapter replaces and significantly expands upon the description of Phase II plans in existing N.J.A.C. 7:8-3.1 and 3.4(a)6.

Proposed N.J.A.C. 7:8-3.1(b) provides a general overview of what is to be addressed by a regional stormwater management plan. A Regional stormwater management plan must address stormwater-related water quality, groundwater recharge and/or water quantity impacts of new and existing land uses in a regional stormwater management planning area and shall be developed on a drainage area basis. Regional plans are not limited to on-site stormwater management measures. A regional stormwater management plan may focus on one specific objective and not address drainage area specific requirements for quality, quantity or recharge if it is necessary to do so for resource or other issues. A regional stormwater management planning area must consist of one or more drainage areas, excluding any part of such drainage area or drainage areas outside the State. The purpose of a regional stormwater management plan is to develop a runoff control plan for existing and future development that makes technical and policy sense for the detailed features and circumstances found within that particular drainage. For this reason, the size of a regional

stormwater management planning area should be a relatively small drainage area (subdrainage area or United States Geological Survey, Hydrologic Unit Code 14). It is more technically and administratively feasible to evaluate and manage in detail a small drainage area than a large drainage area with many local regulatory jurisdictions.

N.J.A.C. 7:8-3.2 Regional stormwater management planning committee and Lead Planning Agency

Proposed N.J.A.C. 7:8-3.2 provides for the establishment of a regional stormwater management planning committee and identifies the responsibilities of the committee. Proposed N.J.A.C. 7:8-3.2 acknowledges that many entities will be affected by an adopted regional stormwater management plan and requires that a committee be established to oversee the development of the plan. The Department strongly encourages local, regional, State, Federal and private entities to participate in plan development through the regional stormwater management committee. It is intended that this committee will be comprised of individuals and entities that are responsible for implementing stormwater runoff controls within the regional stormwater management planning area, and entities and individuals that are otherwise affected by stormwater management decisions in that area. The Department believes that this committee can serve to steer the development of the regional stormwater management plan so that the final outcome will be implementable and technically sound.

Proposed N.J.A.C. 7:8-3.2(c) provides that the regional stormwater management committee shall designate a "Lead Planning Agency" (as defined in N.J.A.C. 7:8-1.2) to act as the primary point of contact in the development of the regional stormwater management plan. The Department strongly encourages numerous local, regional, State, Federal and private entities as well as individuals to be actively involved in plan development through the regional stormwater management committee, however, to promote administrative efficiency a "Lead Planning Agency" shall be designated. The committee must designate one or more public agencies that meet the N.J.A.C. 7:8-1.2 definition of "stormwater management planning agency" to serve as the "Lead Planning Agency." The Lead Planning Agency is expected to act as the designated representative

of the committee and to coordinate the development of the regional stormwater management plan. Multiple agencies may be designated as a "Lead Planning Agency" (see the N.J.A.C. 7:8-1.2 definitions of "Lead Planning Agency" and "stormwater management planning agency"). The Lead Planning Agency should have State-wide, regional, county-wide, or areawide planning or stormwater management responsibility and experience and expertise in stormwater planning. N.J.A.C. 7:8-3.2(c) lists the responsibilities of the Committee with the Lead Planning Agency acting in the coordinating role. These responsibilities include drafting a work plan and schedule, preparing the regional plan, ensuring public participation, and ensuring all other duties are completed as necessary to prepare the Regional Stormwater Management Plan.

Proposed N.J.A.C. 7:8-3.2(d) and (e) provides that a person or entity seeking to establish a regional stormwater management committee for the purposes of developing a regional stormwater management plan shall be recognized by the Department. The purpose of having regional stormwater management committees recognized by the Department is to ensure that duplicative efforts do not take place in the development of regional plans, the Department has adequate opportunity to assist and provide information for the development of the regional plan, and to assure that adequate opportunity for all appropriate effected parties to participate in the development of the regional plan has been provided.

N.J.A.C. 7:8 -3.3 Regional stormwater management plan and elements

Proposed N.J.A.C. 7:8-3.3 describes the minimum elements of a regional stormwater management plan. The development of regional stormwater management plans is not mandatory. However, if regional plans are developed and approved within the framework established in this rule, then the benefits described previously in this summary will be realized. Since one of the benefits of an approved regional stormwater management plan is that drainage area-specific

standards developed in the regional plan replace statewide regulatory standards, it is important that adequate technical information is considered and an appropriate administrative process is followed in the development of the drainage area-specific standards.

Proposed N.J.A.C. 7:8-3.3(a)1 provides that a regional stormwater management plan shall identify the lead planning agency and members of the committee, and describe how the committee and the lead planning agency work together. Proposed N.J.A.C. 7:8-3.3(a) 2 requires that the regional stormwater management plan include statements of authority from each public entity to develop and implement the plan once completed. The Department believes that this should be clearly stated and identified in the plan to assure that there is authority to implement the plan to achieve the positive improvement of stormwater management included in the plan. Proposed N.J.A.C. 7:8-3.3(a) 3-7 lists the elements of the plan with reference the sections where these elements are described in more detail. The regional stormwater management plan shall, unless documented otherwise, include a characterization and assessment of conditions in the area included in the plan; statement of water quality, groundwater recharge, and water quantity; a statement of stormwater management measures to be implemented with an explanation for each; description of the long-term monitoring program to assure the effectiveness of the plan; and a description of the plan implementation strategy.

Proposed N.J.A.C. 7:8-3.3(a)8 provides that a discussion be included in the regional stormwater management plan of the majority and minority positions on any element of the plan on which consensus was not reached. This is important since the regional stormwater management plan can be developed and submitted for review and adoption in accordance with proposed N.J.A.C. 7:8-3.9 even if there is not complete consensus among all members of the regional stormwater management committee.

The Regional Stormwater Management Plan may include additional elements as necessary and appropriate for the planning area. Through implementation of the minimum elements, regional stormwater management plans are intended to establish an administrative process to coordinate

planning between local, regional, and State agencies, and to establish a technical process which addresses water quality, groundwater recharge and water quantity issues as well as impacts from both new and existing land uses. To further tailor the Regional Stormwater Management Plan requirements to provide for measures that are most appropriate for individual waterways, Regional Stormwater Management Plans may additionally include innovative stormwater measures and strategies such as nonpoint source pollutant trading, mitigation strategies, or special protection measures and a stream corridor protection plan to address protection of areas adjacent to waterbodies. For waterbodies subject to N.J.A.C. 7:8-5.5(h), the plan shall provide, at a minimum, protections equivalent to those provided at N.J.A.C. 7:8-5.5(h) and demonstrate that the functional value and overall condition of the special water resource protection area will be maintained or enhanced.

N.J.A.C. 7:8-3.4 Characterization and assessment of the regional stormwater management planning area

Proposed N.J.A.C. 7:8-3.4 describes in detail the characterization and assessment of the regional stormwater management planning area. Through the characterization and assessment process, the regional stormwater management committee collects information about the regional stormwater management planning area, identifies and ranks stormwater-related water quality and/or water quantity impacts, and determines the adequacy of existing stormwater programs to address identified impacts.

The characterization and assessment should be tailored to assist in identification of appropriate drainage area-specific water quantity, groundwater recharge and/or water quality objectives under proposed N.J.A.C. 7:8-3.5 and to develop drainage area-specific design and performance standards for stormwater management measures under proposed N.J.A.C. 7:8-3.6. The characterization and assessment may be refined throughout the development of the regional stormwater management plan.

N.J.A.C. 7:8-3.4(a) sets forth the components of a regional stormwater management plan characterization and assessment. A degree of flexibility in this subsection is established by allowing the committee to determine that one or more of the items in the components listed is not appropriate for a particular study area. For example, the committee may determine that a specific drainage area requires regional stormwater management planning that focuses on stormwater-related impacts of land uses on water quality but not water quantity or groundwater recharge. The Department encourages regional stormwater management plans that include the most detailed and comprehensive assessments and plans feasible on all stormwater related issues. However, if a specific drainage area has high priority groundwater recharge, flooding, or water quality issues that need to be studied and remediated or prevented on an expedited basis and there is not time or resources to address all possible stormwater-related water resources issues, the Department will accept regional stormwater management plans that are focused on one or more priority issues. A clear rationale needs to be included in the regional stormwater management plan stating why the regional stormwater management plan and, therefore, the characterization and assessment focuses on one or more but not all stormwater related water resource issues.

The characterization components and assessment of this information could vary in scope or level of detail depending on the level of resources available to develop a particular regional stormwater management plan, the nature of the regional stormwater management planning area, and the water quality and/or water quantity issues that are to be emphasized in developing the regional stormwater management plan. There is also flexibility to include information in the regional stormwater management characterization and assessment beyond those components detailed in proposed N.J.A.C. 7:8-3.4(a).

The list of information to be provided in proposed N.J.A.C. 7:8-3.4(a)1i–xv includes mapping information that will be necessary to determine drainage area specific conditions in order to identify drainage area solutions to stormwater related water resource issues. Information appropriate for this task includes such items as a map defining the area of the regional stormwater management plan and maps of existing and projected land uses assuming full development under

existing zoning within this area. Mapping existing and projected land uses is essential to identifying sources and causes of existing and potential stormwater related sources of water quality, quantity and groundwater recharge impacts. Mapping soils, topography, waters, coastal and freshwater wetlands, flood hazard areas, groundwater recharge and well head protection areas, environmentally constrained and critical areas, and designated Wild and Scenic Rivers provide information necessary for determining causes and solutions to stormwater related impacts and allows the regional stormwater management plan to target protection of environmentally sensitive or critical land and water areas. Mapping and identification of waterbodies by their Surface Water Quality Classification pursuant to N.J.A.C. 7:9B-1.15 and identification of water quality limited surface waters pursuant to N.J.A.C. 7:15-6 provide a basis to focus the stormwater related water quality objectives, performance standards and measures in the regional stormwater management plan. Information on man-made stormwater conveyances, storage and discharge systems including outfall pipes and the drainage area of outfalls is essential to identifying stormwater flow patterns within a drainage area. It is necessary to identify the origin of the runoff and what land uses it is flowing over to identify drainage area specific solutions to runoff issues. Identification of potable surface water intakes and public water supply reservoirs will help ensure adequate measures are taken to protect drinking water supplies and also can provide information about water flow patterns.

Proposed N.J.A.C. 7:8-3.4(a)2-4 includes additional information necessary to complete a regional characterization and assessment. It is imperative to identify the jurisdictional boundaries of the government agencies within the regional stormwater management planning area when it comes to identifying what strategies and measures will be implemented and by whom. Physical characteristics of the drainage area need to be identified such as slopes, swales and impoundments to complete hydrologic and hydraulic modeling or analysis of the regional stormwater management planning area. The assessment must also address existing land uses and projected land uses assuming full development under existing zoning and taking into account permanently preserved land.

Proposed N.J.A.C. 7:8-3.4(a)5 provides for the identification of the existing runoff related quality, quantity and groundwater recharge regulations and programs in the regional stormwater management planning area by all agencies. Under this proposed section, existing stormwater runoff control programs in the regional stormwater management planning area are to be evaluated to estimate their adequacy to control identified stormwater-related water quality, groundwater recharge and/or water quantity impacts. The Department believes that it is necessary to determine the scope and impact of existing programs in order to determine what additional measures must be included in the plan. For example, additional measures will be needed to remediate impairment identified in water quality limited surface waters identified under proposed N.J.A.C. 7:8-3.4 (a)1xiii.

Proposed N.J.A.C. 7:8-3.4(a)6 requires a summary of other information that could have been useful in completing the regional stormwater management plan if addition resources or time was available for future drainage area efforts. This will identify where additional resources can be utilized if and when resources become available.

Proposed N.J.A.C. 7:8-3.4(b) encourages the use of existing information as appropriate for characterizing and assessing a regional stormwater management planning area. The Department recognizes that various kinds of characterization and assessment efforts have occurred from time to time throughout the State for stormwater management, watershed management or other purposes. This work should be utilized as appropriate to save time and funds. The Department's Geographical Information System contains many of the data layers listed for this characterization. The Department's GIS Website (www.state.nj.us/dep/gis) should be consulted for available information prior to initiation of any data collection. The mapping components shall be completed in accordance with Digital Data standards in Appendix A of the Department's Rules of Practice and Procedure at N.J.A.C. 7:1 unless justification is provided for not using these standards.

Proposed N.J.A.C. 7:8-3.4(c) provides for identification of information on locations and activities from outside the regional stormwater management planning area that could impact the drainage area and, therefore, should be addressed by the regional stormwater management plan.

Proposed N.J.A.C. 7:8-3.4(d) provides that water quality impacts from new and existing land uses shall be identified and ranked using the information obtained in the characterization including the modeling or analysis at N.J.A.C. 7:8-3.4(a)4. In order to rank stormwater related pollutant sources, potential and existing sources need to be identified through an inventory that includes all possible pollutant sources from all lands in the regional stormwater management planning area. Identification and ranking of specific stormwater related pollutants and identification of designated uses that are adversely affected is necessary in order to develop existing and potential sources of pollution. The Department notes that “designated uses” are based on the surface water classification of the stream at N.J.A.C. 7:9B-1.12 and "existing uses" refers to that term as defined at N.J.A.C. 7:8-1.4. This process will help focus the development of measures to address priority stormwater related water quality impacts.

Proposed N.J.A.C. 7:8-3.4(e) provides that stormwater related water quantity and groundwater recharge impacts from existing and potential land uses shall be identified and ranked using the information obtained in the characterization. Ranking of these existing or potential stormwater related quantity and groundwater recharge issues shall be based on threat to public health, safety, and welfare; risk to water supplies; and risk of damage to biological integrity of waters.

N.J.A.C. 7:8-3.5 Drainage area-specific water quality, groundwater recharge and water quantity objectives

Proposed N.J.A.C. 7:8-3.5 requires development of drainage area-specific water quality, groundwater recharge and water quantity objectives. These objectives are an important element in regional stormwater management because they are intended to be tailored to the specific needs or

problems of the individual drainage area(s) under study. The objectives for drainage area-specific design and performance standards may differ from the Statewide Design and Performance Standards for Stormwater Management Measures at proposed N.J.A.C. 7:8-5 provided the selected objectives provide at least the same level of protection as the proposed N.J.A.C. 7:8-5 measures. The drainage area-specific objectives shall target the most significant of the stormwater-related pollutant sources and pollutant types and/or the most significant of the stormwater-related water quantity problems, as well as take into consideration the stormwater-related water quality and/or quantity issues identified in a watershed management planning process or by other local agencies and stakeholders.

The objectives chosen for inclusion in the regional stormwater management plan must be consistent with the goals of stormwater management planning at proposed N.J.A.C. 7:8-2.2 and provide at least as much protection from stormwater-related water quantity and water quality impacts of major development as would be provided under proposed N.J.A.C. 7:8-5, Design and Performance Standards for Stormwater Management Measures. Examples of drainage area-specific water quality and water quantity objectives are reducing or preventing algae blooms or weed growth in a particular reservoir or coastal water body; restoring or protecting desirable riparian habitat features within or along particular stream channels; and reducing or preventing a substantial increase in flooding problems along particular reaches of a river. Drainage area-specific objectives may address stormwater-related water quantity problems and/or water quality impacts associated with existing as well as new land uses. As the above examples suggest, a drainage area-specific objective may pertain to the entire regional stormwater management planning area or just to a portion of the planning area.

Proposed N.J.A.C. 7:8-3.5(c) provides that if a Total Maximum Daily Load (TMDL) has been established for a waterbody or waterbody segment in the regional stormwater management planning area, then the drainage area objectives shall incorporate the load reductions and measures necessary to implement the TMDL. States are required to develop a list of impaired waters that do not meet surface water quality standards after the implementation of technology based effluent

limits on point source discharges. These waters are known as water quality limited surface waters. A TMDL must be developed for the waterbody. (See N.J.A.C. 7:15-6 and 7, and 40 C.F.R. 130.7). A TMDL specifies that maximum amount of a pollutant that a waterbody can receive and still meet surface water quality standards. A TMDL also includes a margin of safety and, if appropriate, a reserve capacity. The TMDL allocates pollutant loadings among point and nonpoint pollutant sources. Through TMDLs, it is necessary to identify stormwater related pollutant sources and control measures required to achieve the reductions established for nonpoint sources.

In addition, if a TMDL has not yet been established for a water quality limited surface water, it is required that a regional stormwater management planning process identify and rank stormwater related water quality sources and pollutants and include drainage area water quality objectives are included in the regional stormwater management plan for known stormwater related impairments. To identify impaired waters, the Department's list prepared to comply with Federal Clean Water Act, Section 303(d) and 305(b) should be used.

N.J.A.C. 7:8-3.6 Drainage area-specific design and performance standards

Proposed N.J.A.C. 7:8-3.6 requires development of drainage area-specific design and performance standards to address the drainage area-specific water quality and water quantity objectives identified under proposed N.J.A.C. 7:8-3.5. A drainage area-specific design and performance standard is intended to be a specific target established to address one or more drainage area-specific water quality or water quantity objectives. Ideally, the drainage area-specific standards would achieve the corresponding drainage area-specific objectives. In some instances, however, an objective may be a long-term objective that is not intended to be fully met by a particular standard(s), or it may not be practicable or possible to establish more than an estimated relationship between the standard and the corresponding objective(s).

An example of a Statewide performance standard is the stormwater runoff quality control standard of 80% reduction of total suspended solids and control of nutrients to the maximum extent

feasible (see proposed N.J.A.C. 7:8-5.5). The drainage area-specific design and performance standards are expected to be designed to alleviate or prevent stormwater-related pollution, erosion, flooding, or other water quantity problems that are particular to the study area. For example, a regional stormwater management plan for a coastal drainage area might not focus on improved total suspended solid or nutrient control but include design and performance standards for best management practices that control bacteria contamination that lead to beach or shellfish bed closures. An example of this type of standard may be a requirement that all catch basins in storm sewers which drain to shellfish beds be designed with water quality controls that reduce bacteria loads by a specific percentage. In this case, a drainage area-specific objective may be to open more shellfish beds for harvesting or reducing beach closures.

As the above example suggests, a drainage area-specific design and performance standard may pertain to the entire regional stormwater management planning area or a portion of that area, and it may pertain to water quality only, water quantity only or both. For example, drainage area-specific design or performance standards may be developed for areas requiring special groundwater recharge, water quality or aquatic habitat protection. The Department believes that drainage area based stormwater management plans will be more effective if measurable criteria for stormwater management measures are established as design or performance standards for structural and nonstructural stormwater management strategies.

Proposed N.J.A.C. 7:8-3.6(c) provides that design and performance standards in proposed N.J.A.C. 7:8-5 shall be incorporated into the regional stormwater management plan unless alternative drainage area-specific design and performance standards have been developed. Alternative drainage area-specific standards, together with any design and performance standards in proposed N.J.A.C. 7:8-5 that are incorporated into that plan, shall provide at least as much protection from stormwater-related water quantity and water quality impacts of new major development as would be provided under proposed N.J.A.C. 7:8-5. The Department strongly encourages drainage area-specific design and performance standards to address stormwater-related

water quantity problems and/or water quality impacts associated with existing as well as new land uses.

Proposed N.J.A.C. 7:8-3.6(d) provides that, while Statewide performance standards proposed in N.J.A.C. 7:8-5 may be replaced in a drainage area through a regional stormwater management plan, structural stormwater management measures shall still conform to the general standards at proposed N.J.A.C. 7:8-5.7.

Proposed N.J.A.C. 7:8-3.6(e) provides that drainage area specific design and performance stardards may be adapted based on the location of the measure within the regional stormwater management planning area to allow flexibility in the use of measures as appropriate.

N.J.A.C. 7:8-3.7 Selection of stormwater management measures

Proposed N.J.A.C. 7:8-3.7(a) requires selection of stormwater management measures to meet the drainage area-specific water quality objectives developed under proposed N.J.A.C. 7:8-3.5 and the design and performance standards established under proposed N.J.A.C. 7:8-3.6. The selection of appropriate stormwater management measures, both structural and nonstructural, should be based on a number of important factors including evaluation of pollutant removal, flood and erosion control efficiency, land owner and local agency acceptance, financial incentives and costs, availability of land, operation and maintenance needs, feasibility, and availability of technical assistance.

Proposed N.J.A.C. 7:8-3.7(b) lists categories of management measures that are important for effective control of stormwater runoff. Stormwater management measures considered and selected for inclusion in the plan shall address the control of runoff from new and existing land uses, special area protection, and educational programs. This subsection includes illicit

connections that are addressed in the stormwater permitting program proposed elsewhere in today's Register.

Proposed N.J.A.C. 7:8-3.7 (c) provides that a written rationale shall be developed for each selected stormwater management measure selected for inclusion in the plan addressing the feasibility, benefits, cost and anticipated performance of each selected measure. The Department believes it is important that the plan reflect the analysis that led to selection of each measure.

To ensure the continued viability of implemented measures, proposed N.J.A.C. 7:8-3.7 (d) provides that preventive and corrective maintenance responsibilities and schedules be included for each selected stormwater management measure.

N.J.A.C. 7:8-3.8 Strategy for implementing and evaluating stormwater management measures

Proposed N.J.A.C. 7:8-3.8 requires development of a strategy for implementing the stormwater management measures selected under N.J.A.C. 7:8-3.7 in the drainage area and for evaluating the effectiveness of a regional stormwater management plan. This is extremely important in ensuring that the plan is implemented and modified as necessary to assure that it continues to accomplish its intended objectives. Under proposed N.J.A.C. 7:8-3.8(a), the Lead Planning Agency or another agency shall be responsible to track plan implementation in meeting the objectives. The strategy for implementing regional stormwater management measures should identify who is going to do what, by when, and with what resources.

Proposed N.J.A.C. 7:8-3.8(b) provides that the implementation strategy shall also identify the agencies that will implement the stormwater management measures and conduct long term monitoring, and identify the enabling mechanisms (for example, regulations, ordinances, permits, and interagency agreements) by which those measures will be implemented. The implementation strategy is not required to contain the text of or detailed requirements for those enabling mechanisms, although the inclusion of model ordinances or other enabling mechanisms are

encouraged. The Department is not requiring the actual text of the enabling mechanism to be included because amendments to adopted regional stormwater management plans are processed as amendments to the applicable water quality management (WQM) plans (see the discussion of proposed N.J.A.C. 7:8-3.9 below), and it may become necessary to modify the text or detailed specifications of such enabling mechanisms. The implementation strategy shall also include a schedule and cost estimate for implementation of measures and identify existing and potential funding sources.

Proposed N.J.A.C 7:8-3.8(c) requires development of a long-term monitoring program to provide information for use in evaluating the effectiveness of the regional stormwater management plan once implemented. In order to limit costs associated with the long term monitoring program, the Department encourages the use of information already collected by others as well as use of less costly monitoring methods, such as monitoring by properly trained volunteers where appropriate. The use of environmental indicators is encouraged. Environmental indicators are direct or indirect measures of environmental quality that are used to assess the status and trends of environmental conditions. For example, the Department uses benthic macroinvertebrate community health and status of recreational use impairment at bathing beaches as indicators of water quality.

Proposed N.J.A.C. 7:8-3.8(d) requires development of a procedure for evaluating, at least every five years, the effectiveness of the regional stormwater management plan in meeting the objectives identified in the plan. At a minimum, this evaluation shall be based on results of the tracking of implementation measures by the lead planning agency designated proposed N.J.A.C. 7:8-3.8(a). Based on that evaluation or any other information, revisions or amendments may be submitted in accordance with N.J.A.C. 7:8-3.9. Changes to the plan may be warranted not only by new information about water quality, water quantity, land use, or other conditions in the regional stormwater management planning area, but also for other reasons such as advances in stormwater management science and technology, development of comprehensive regional management plans that are not limited to stormwater, and changes in stormwater management regulation.

N.J.A.C. 7:8-3.9 Regional stormwater management plan review, adoption, and amendment and/or revision

Proposed N.J.A.C. 7:8-3.9 describes the process for reviewing, adopting, and changing regional stormwater management plans. N.J.A.C. 7:8-3.9(a) requires that once a regional stormwater management plan is completed, the Lead Planning Agency shall submit the plan to the Department (and if appropriate, to the designated planning agency or agencies) under the Water Quality Management Planning rules at N.J.A.C. 7:15-3.4 as a request to amend the areawide water quality management (WQM) plan or plans.

Proposed N.J.A.C. 7:8-3.9(b) provides that in reviewing stormwater management plans, the Department will consider whether the plan conforms with the applicable requirements of N.J.A.C. 7:8, and respond in accordance with the provisions of the of the Water Quality Management Planning Rules at N.J.A.C. 7:15-3.4(g). The Department's decision on a proposed amendment will be made in accordance with N.J.A.C. 7:15-3.4(g).

Proposed N.J.A.C. 7:8-3.9 (c) provides that amendments and revisions to regional stormwater management plans are to be processed as amendments and revisions to the applicable WQM plan or plans. All other changes to regional stormwater management plans must be processed as amendments to the WQM plan. Under the Water Quality Management Planning rules, amendments are subject to public notice and opportunity for comment while revisions undergo a more limited process. Through this process, a regional stormwater management plan will be directly integrated into the areawide WQM plan.

N.J.A.C. 7:8-3.10 Implementation of adopted regional stormwater management plan

Proposed N.J.A.C. 7:8-3.10 generally describes the responsibility of implementing agencies and entities to implement the stormwater management measures identified in an adopted regional stormwater management plan.

Implementation at the local level is critical to the success of the regional stormwater management plan. Municipalities must implement stormwater management measures in an adopted regional stormwater management plan for the plan to protect water quality, preserve or enhance water resource habitats, encourage groundwater recharge and minimize flooding and erosion. The Department has set in place incentives and a regulatory mechanism for the implementation of regional stormwater management plans by municipalities in their stormwater management plans, and in their site plan and subdivision review process under this rule proposal. Incentives include nonpoint source pollution control grants available from the Department's Nonpoint Source Program under Federal Clean Water Act, Section 319. Information related to guidelines for nonpoint source grant applications is available on the Department's website at www.njstormwater.org. This section provides that applicable components of regional stormwater management plans will be implemented by the Department through permit programs under Flood Hazard Area Control Act rules, the Coastal Zone Management rules, the Freshwater Wetlands Protection Act rules, the Dam Safety Standards, and any other applicable statutes and rules, including the plan consistency requirements under the Water Quality Management Planning Rules pursuant to N.J.A.C. 7:15 and NJPDES stormwater permits. Proposed N.J.A.C. 7:8-3.10(a)2 indicates that municipalities in the regional stormwater management planning area shall incorporate the applicable provisions of the regional stormwater management plan. Proposed N.J.A.C. 7:8-3.10(a)3. recognizes that the Residential Site Improvement Standards at N.J.A.C. 5:21-7 requires compliance with approved regional stormwater management plans. Proposed N.J.A.C. 7:8-3.10(a)4 provides that the Department shall not issue a permit for a project or activity that conflicts with an Areawide Water Quality Management Plan, pursuant to N.J.A.C. 7:15-3.1.

Subchapter 4. Municipal Stormwater Management Planning

General

This subchapter pertains to municipal stormwater management plans and municipal stormwater control ordinances to implement those plans. The New Jersey Storm Water Management Act requires municipalities to develop such plans and ordinances, provided that the Department has promulgated comprehensive stormwater management regulations and has made a 90 percent grant for the preparation of such a plan available to the municipality.

The Department is also proposing amendments to the NJPDES rules elsewhere in today's New Jersey Register to establish a new Stormwater Regulation Program. All New Jersey municipalities that operate separate storm sewer systems will be required to develop and adopt stormwater management plans and ordinances as a requirement of the Municipal Stormwater Regulation Program described earlier in this summary. The Department anticipates that municipalities will be regulated under NJPDES general permits for their separate storm sewer systems. The general permits for municipalities will require the adoption of a Stormwater Management Plan and Ordinance in accordance with the Stormwater Management Rules to meet the new development requirements of the permits. For existing development, the permits will require local public education and outreach, and, for most municipalities, best management practices to address improper disposal of waste; solids and floatable controls; and municipal maintenance yard operations. Additional measures are anticipated to be required under the NJPDES Municipal Stormwater Regulation Program to implement stormwater-related Total Maximum Daily Loads or other stormwater management requirements established in a Water Quality Management Plan adopted under N.J.A.C. 7:15. For example, municipal stormwater management plans and ordinances will be a principal mechanism for implementing the regional stormwater management plans that are adopted under Subchapter 3. The Department encourages the development of regional stormwater management plans on a drainage area basis. However, regardless of whether a regional plan is in place, plans and ordinances would still be adopted on the municipal level.

N.J.A.C. 7:8-4.1 Scope

Proposed N.J.A.C. 7:8-4.1 sets forth the scope of Subchapter 4. This subchapter describes stormwater management planning and implementation at the municipal level, including plan elements, schedule for adoption of plans and ordinances, county review process, and variance or exemption from design and performance standards for stormwater management measures.

N.J.A.C. 7:8-4.2 Municipal stormwater management plan and elements

Proposed N.J.A.C. 7:8-4.2 sets forth general requirements concerning the content of municipal stormwater management plans, and also lists the minimum elements of such plans. Proposed N.J.A.C. 7:8-4.2 replaces most of the Phase I planning provisions in existing N.J.A.C. 7:8-1.4(b) and 3.1(a), and, in conjunction with proposed N.J.A.C. 7:8-2.3, also replaces existing N.J.A.C. 7:8- 3.3. Language in those existing rule provisions has been reorganized and revised for greater clarity, and for conformance with other provisions of the proposed new rules.

Under proposed N.J.A.C. 7:8-4.2(a), every municipal stormwater management plan must address stormwater-related water quality, groundwater recharge, and water quantity impacts of new major development. Major development for the purposes of municipal stormwater management plans and control ordinances is limited to development ultimately disturbing one or more acres of land and does not include increasing impervious surface by one-quarter acre or more, unless there is a corresponding disturbance of at least one acre of land. The limit of the threshold of major development for municipal stormwater management plans is to provide consistency with the Federal requirements for the NJPDES Stormwater Regulation Program as described earlier in this summary. A municipal stormwater management plan may address stormwater-related water quality and water quantity impacts of existing land uses. For example under proposed N.J.A.C. 7:8-4.2(b), a municipal stormwater management plan may have to include stormwater management measures for existing land uses in order to implement part of an adopted regional stormwater management plan.

Proposed N.J.A.C. 7:8-4.2(b) provides that, after an applicable regional stormwater management plan (or plans) is adopted, the adopted municipal stormwater management plan (as well as the stormwater control ordinance(s)) shall be amended as necessary to implement it. Under the New Jersey Storm Water Management Act, municipalities do not cease to perform stormwater management planning once regional stormwater management plans are adopted for applicable drainage areas. On the contrary, municipal stormwater management plans will be some of the principal mechanisms for implementing regional stormwater management plans.

Proposed N.J.A.C. 7:8-4.2(c) establishes minimum requirements for the contents of a municipal stormwater management plan. Proposed N.J.A.C. 7:8-4.2(c)1 requires municipal stormwater management plans to describe how the municipal stormwater management plan will achieve the goals of stormwater management planning at proposed N.J.A.C. 7:8-2.3. Although the list of elements at proposed N.J.A.C. 7:8-4.2(c)1 through (c)11 is similar in some respects to the list of elements at existing N.J.A.C. 7:8-3.1(a)1i(1) through (5), there are also several differences between those two lists. For example, whereas existing N.J.A.C. 7:8-3.1(a)1i(2) requires "delineation of jurisdictional authority and responsibility" in the Phase 1 plan area, this provision is eliminated entirely from proposed N.J.A.C. 7:8-4.2(c) because it is deemed unnecessary. Also, the reference in existing N.J.A.C. 7:8-3.1(a)1i(2) to a "fee schedule for implementation" is deleted because it is superfluous (municipalities may charge fees under such statutory provisions as N.J.S.A. 40:55D-8 and 55D-18 without this rule provision). While existing N.J.A.C. 7:8-3.1(a)1i(3) includes a list of items that may be necessary for completing the municipal stormwater plan such as soil surveys, natural resources inventories and pertinent elements of local and county master plans, proposed N.J.A.C. 7:8-4.2(c) 2 and 3 require the municipal stormwater plan include maps identifying where water bodies, groundwater recharge areas and well head protection areas are located based on existing mapping sources available from U.S. Department of Agriculture, U.S. Geological Survey and/or the New Jersey Geological Survey.

Proposed N.J.A.C. 7:8-4.2(c)4 requires documentation that the minimum performance standards are achieved by requiring a statement describing how the stormwater management plan

will incorporate the Design and Performance Standards for Stormwater Management Measures at proposed N.J.A.C. 7:8-5 or those established in a regional stormwater management plan or Water Quality Management Plan. Though existing N.J.A.C. 7:8-3.4(a)5 recognizes the importance of maintenance of stormwater management measures, proposed N.J.A.C. 7:8-4.2(c)5 requires a statement in the municipal plan to address how maintenance for stormwater management measures will be accomplished for both regular preventive activities such as cutting grass in established basins and also for more periodic repair work. Proposed N.J.A.C. 7:8-4.2(c)6 requires a description of how the municipal stormwater management plan will ensure compliance with Safety Standards for Stormwater Management Basins at proposed N.J.A.C. 7:8-6. Also, whereas existing N.J.A.C. 7:8-3.1(a)1i does not specifically mention Soil Conservation Districts, proposed N.J.A.C. 7:8-4.2(c)7 requires the municipal stormwater management plan to describe how the municipal stormwater management plan is coordinated with the appropriate Soil Conservation District and any other stormwater management plans.

Existing N.J.A.C. 7:8-3.1(a)1i(3) requires an evaluation of existing stormwater management plans and ordinances. In contrast, proposed N.J.A.C. 7:8-4.2(c)8 more specifically requires an evaluation of the municipal master plan and development regulations to identify how they implement the nonstructural strategies in N.J.A.C. 7:8-5.3(b). This evaluation is required to be part of the municipal master plan reexamination report and include updates to the master plan and development regulations as appropriate. Proposed N.J.A.C. 7:8-4.2(c)9 provides details for the evaluation stated under proposed N.J.A.C. 7:8-4.2(c)8. Proposed N.J.A.C. 7:8-4.2(c)9 requires the identification of total acreage of impervious surfaces that will occur at full development based on maps of projected land uses under existing zoning and the estimated future pollutant load assuming full build out of the project land uses. The current rule at N.J.A.C. 7:8-3.1(a)1i(3) requires the evaluation of existing county and local stormwater management plans and ordinances with regard to the water quantity/quality objectives and minimum standards discussed in this chapter. Under proposed N.J.A.C. 7:8-4.2 (c)10, a municipality may elect not to complete the build out assessment and identify future increases in impervious surface if the municipality documents that it has a combined total of less than one square mile of vacant or agricultural lands. Agricultural lands may

be excluded if the development rights to these lands have been permanently purchased or restricted by covenant, easement or deed. Vacant or agricultural lands in environmentally constrained areas may be excluded if the documentation also includes an overlay map of these areas at the same scale as the other maps provided. Documentation shall include an existing land use map at an appropriate scale to display the land uses of each parcel within the municipality. Additional guidance for the build out analysis will be available in the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual).

Proposed N.J.A.C. 7:8-4.2(c)11 requires that a municipality include a mitigation plan in the municipal stormwater management plan prior to granting a variance or exemption from the design and performance standards in N.J.A.C.7: 8-5. The mitigation plan in the municipal plan shall identify what measures are necessary to offset the deficit created by granting the variance or exemption. The mitigation plan shall ensure that mitigation is completed within the drainage area and for the performance standard for which the variance or exemption was granted. For example, the municipality could in the mitigation plan identify areas where remedial work could be accomplished as part of a mitigation effort for specific performance standards of proposed N.J.A.C. 7:8-5 such as groundwater recharge, water quality or water quantity.

Existing N.J.A.C. 7:8-3.1(a)1i(5) requires the Phase I plan to "develop a recommended storm water management ordinance," where as proposed N.J.A.C. 7:8-4.2(c)12 requires the municipal stormwater management plan to include a copy of the recommended stormwater control ordinance.

N.J.A.C. 7:8-4.3 Schedule for adoption of municipal stormwater management plan and ordinances

Proposed N.J.A.C. 7:8-4.3 sets forth the schedule for adoption and submission to county review agencies of municipal stormwater management plans and implementing ordinances. This section consolidates and revises language from existing N.J.A.C 7:8-2.2, 2.3(a), 2.8, 3.1(a)1ii, and 3.6. Proposed N.J.A.C. 7:8-4.3(a) provides that municipal plan requirements in proposed N.J.A.C. 7:8-4.2(c)8 and (c)9 are not operative until 24 months from the effective date of this rule.

This section provides two possible deadlines for municipal stormwater management plan adoption based on the deadlines established in the MLUL and those to be established pursuant to the Stormwater Regulation Program in the New Jersey Pollutant Discharge Elimination System rules. As discussed previously in this summary, the Department expects all New Jersey municipalities will be required to develop and adopt stormwater management plans and ordinances pursuant to this rule as a requirement of the Stormwater Regulation Program to implement the Federal Environmental Protection Agencies, Phase II Rules. Municipalities are required under the federal program to be covered under a permit for the stormwater from their separate storm sewers by March, 2003. For new development, the permit will require the adoption of a Stormwater Management Plan and Ordinance in accordance with these rules.

An additional deadline for municipal stormwater management plan and ordinance adoption is under N.J.A.C. 7:8-4.3(a)2 which requires a municipality to adopt a municipal stormwater management plan by the next reexamination of the municipal master plan if a grant for 90 percent of the costs for preparing the plan has been made available to a municipality by the Department. The Department made stormwater management planning grants available to many municipalities under N.J.S.A. 40:55D-98 in 1985 and 1987.

N.J.A.C. 7:8-4.3(b) requires that within one year after the municipality adopts the municipal stormwater management plan, the municipality shall adopt a stormwater control ordinance or ordinances to implement that plan, and shall submit the adopted stormwater management plan and implementing ordinance(s) to the county review agency for approval. The "county review agency" is either a county planning agency or, in some circumstances, a county water resources association (see the N.J.A.C. 7:8-1.2 definition of "county review agency").

N.J.A.C. 7:8-4.3(c) makes it clear that amendments shall be made as necessary to a municipal stormwater management plan and that these amendments may require amendments to the municipal stormwater control ordinance(s). Such amended plans and ordinance(s) must also be submitted to

the county review agency for approval. Existing N.J.A.C. 7:8-2.2(a) does not expressly refer to submission of amended plans and ordinances. N.J.A.C. 7:8-4.3(d) requires the municipality to reexamine the municipal stormwater management plan at each reexamination of the municipality's master plan under N.J.S.A. 40:55D-89.

Similar to existing N.J.A.C. 7:8-3.(a)1ii, under proposed N.J.A.C. 7:8-4.3(e) municipal stormwater management plans and ordinances are to be amended to implement regional stormwater management plans In addition, both the municipal stormwater management plan and ordinances are to be amended to implement any amendments to the regional stormwater management plan within one year of adoption of the new or amended regional plan. In both the case of the new or amended regional stormwater management plans, amendments to the local plan and ordinances must be made.

N.J.A.C. 7:8-4.4 County review process

This section outlines the process for county review and approval of municipal stormwater management plans and municipal stormwater control ordinances. It consolidates and revises language from existing N.J.A.C. 7:8-2.2(b), 2.4, and 2.5.

Proposed N.J.A.C. 7:8-4.4(a) requires the municipality to submit a copy of the stormwater management plan to the county review agency and to the Department. Proposed N.J.A.C. 7:8-4.4(b) sets forth that the county review agency shall assess whether the plan conforms with the applicable requirements of this chapter in reviewing the adopted municipal stormwater management plan and implementing ordinance(s).

Proposed N.J.A.C. 7:8-4.4(c) requires the county review agency to approve, conditionally approve, or disapprove the adopted municipal stormwater management plan and implementing ordinance(s) within sixty (60) calendar days of receipt. In accordance with N.J.S.A. 40:55D-97, proposed N.J.A.C. 7:8-4.4(c) provides that if the county review agency does not take one of those actions

within 60 days, the plan and ordinance(s) shall be deemed approved. The county review agency must send the Department a copy of its written decision to approve, conditionally approve, or disapprove the plan and implementing ordinance(s).)

Proposed N.J.A.C. 7:8-4.4(d) establishes that a municipal stormwater management plan and ordinance(s) approved under (c) above shall take effect immediately and that conditionally approved plans and ordinance(s) shall take effect upon adoption by the municipality of amendments specified by the county review agency.

Proposed N.J.A.C. 7:8-4.4(e) requires the municipality to post the approved stormwater a management plan and ordinance upon the municipal website and to provide notice of such posting to the Department, the appropriate Soil Conservation District and the State Soil Conservation Committee within thirty (30) days of the effective date of the municipal stormwater management plan and ordinance(s). If the municipality does not post and notify as such, then the municipality shall send a copy of the effective municipal stormwater management plan and ordinance to the Department and provide notice of the approval to the appropriate Soil Conservation District and the State Soil Conservation Committee. If the Soil Conservation District or State Soil Conservation Committee requests, a copy of the plan and ordinance(s) must be supplied by the municipality.

Proposed N.J.A.C. 7:8-4.5 provides that the Department may review municipal stormwater management plans and ordinances and make recommendations to correct deficiencies regardless of whether the plans and ordinances have been approved by the county review agency.

Proposed N.J.A.C. 7:8-4.6 is similar to existing N.J.A.C. 7:8-3.5 insofar as it provides that a municipality shall submit a written report to the county review agency when the municipality grants a variance or exemption from the design and performance standards set forth in its approved stormwater management plan and stormwater control ordinance. Unlike existing N.J.A.C. 7:8-3.5, however, proposed N.J.A.C. 7:8-4.6 also requires the municipality, in order to grant variances and exemptions, the approved municipal stormwater management plan must included a mitigation plan

in accordance with N.J.A.C. 7:8-4.2(c)11 and the municipality must submit a written report to the county review agency and the Department describing how mitigation action is to be accomplished when variances or exemptions are granted. The requirement in existing N.J.A.C. 7:8-3.5 to report exemptions from county ordinances, regulations, or resolutions is deleted because Subchapter 4 is concerned with municipal plans and ordinances, and because N.J.S.A. 40:55D-97 presumes that counties have considerable expertise in stormwater management.

Subchapter 5 Design and Performance Standards for Stormwater Management Measures

General

This subchapter establishes design and performance standards for stormwater management measures required by stormwater management plans and other regulatory programs.

N.J.A.C. 7:8-5.1 Scope

Proposed N.J.A.C. 7:8-5.1 sets forth the scope of Subchapter 5. This subchapter establishes design and performance standards for stormwater management measures for major development that are intended to minimize the adverse impact of stormwater runoff on water quality, water quantity and loss of groundwater recharge in receiving water bodies. Subchapter 5 replaces the "general standards" in existing N.J.A.C. 7:8-3.4. In addition, Subchapter 5 and the cross-references to Subchapter 5 in N.J.A.C. 7:7E-8.7(a)3 and N.JA.C. 7:13-2.8(a)3 provide the stormwater management requirements that will be implemented under N.J.A.C. 7:7E-8.7 and N.J.A.C. 7:13-2.8.

Proposed N.J.A.C. 7:8-5.1(b) provides that the standards in Subchapter 5 do not apply to major development if alternative design and performance standards are applicable under a regional stormwater management plan adopted in accordance with this chapter or a Water Quality Management Plan adopted in accordance with N.J.A.C.7:15. Alternative standards may be

applicable provided the standards achieve at least as much protection from stormwater-related loss of groundwater recharge, water quantity and water quality impacts of new major development as would be provided through application of the standards in Subchapter 5 and the alternative standards conform to the general standards for structural stormwater management measures in N.J.A.C. 7:8-5.7. An adopted regional stormwater management plan may retain one or more of the standards in Subchapter 5. The Department expects that many regional stormwater management plans (and many of the municipal stormwater management plans that implement regional stormwater management plans) will include such alternative standards in place of some of the standards in Subchapter 5.

N.J.A.C. 7:8-5.2 Stormwater management measures for major development

Proposed N.J.A.C. 7:8-5.2 sets forth the framework for incorporating stormwater management measures into the design of a major development. Under proposed N.J.A.C. 7:8-5.2(a), stormwater management measures for major development must be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards at N.J.A.C. 7:8-5.4 and 5.5. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies at N.J.A.C. 7:8-5.3 into the design. Nonstructural strategies should be considered and included early in the design phase of the project, in order to minimize the impacts of development due to stormwater runoff. In many instances, and particularly where dense development is occurring, nonstructural strategies will need to be augmented with structural measures as described in N.J.A.C. 7:8-5.7 to meet the erosion control, groundwater recharge, stormwater runoff quantity and quality control design and performance standards. The use of nonstructural strategies must be exhausted in the design of the project. If nonstructural strategies alone are not sufficient to meet these performance standards, structural stormwater management measures at N.J.A.C. 7:8-5.7 necessary to meet these standards shall be incorporated into the design. Under proposed N.J.A.C. 7:8-5.2(b), a maintenance plan must be developed under N.J.A.C. 7:8-5.8 for the selected stormwater management measures.

Maintenance plans are necessary to ensure that stormwater management measures fulfill their intended functions.

Under proposed N.J.A.C. 7:8-5.2(c), design of the development shall incorporate stormwater management measures to avoid or minimize adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly Helonias bullata (swamp pink) and/or Clemmys muhlenbergi (bog turtle). Impacts of changes to hydrology and stormwater water discharges have been documented on swamp pink and bog turtles.

The U.S. Fish and Wildlife Service determined *Helonias bullata* to be a threatened species in September 1988. Helonias bullata was listed as a threatened plant species on Sept 9, 1988 (53 Fed. Reg. 35076, 35080). See also 50 CFR 17.11 and 17.12 which provides a master list of wildlife and plants respectively. *Helonias bullata* is also on the Department's Endangered Species Plant List at N.J.A.C. 7:5C-5.1 in accordance with N.J.A.C. 7:5C-2.2(a)2, which requires that all native plant species listed under that Act be listed as endangered in New Jersey. Moreover, N.J.A.C. 7:7A-9.5(a)2iii singles out *Helonias bullata* for special consideration because the species is globally endangered and New Jersey contains the majority of the remaining populations worldwide. Several dozen municipalities in Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Middlesex, Monmouth, Morris, Ocean, and Salem Counties have documented record of *Helonias bullata*.

Helonias bullata is found in groundwater-influenced wetland habitat that rarely, if ever, is inundated by flooding. The U.S. Fish and Wildlife Service compiled the Recovery Plan for this species in 1991, and the Department's Office of Natural Lands Management has been conducting survey, research and recovery activities on *Helonias bullata* since 1988. Changes to the hydrology resulting in drying or increased flooding of the wetlands supporting *Helonias bullata* have been cited as a significant threat to the species survival. Silting and scouring from increased stormwater discharge has repeatedly been observed to degrade *Helonias bullata* populations and their habitat.

It is the Department's opinion that the best stormwater management that can be applied to *Helonias bullata* wetland habitat would be practices that keep turbidity, velocity, volume and periodicity of stormwater discharge to the wetland at a level similar to that prior to development, and practices that do not result in a reduction of groundwater discharge to the wetland.

In November 1997, the U.S. Fish and Wildlife Service determined *Clemmys muhlenbergi* to be a threatened species and stated that there are 53 known extant *Clemmys muhlenbergi* sites in Burlington, Hunterdon, Monmouth, Morris, Ocean, Somerset, Sussex, Union, and Warren Counties (62 Fed. Reg. 59605). *Clemmys muhlenbergi* is on the Department's list of endangered species at N.J.A.C. 7:25-4.13(b)7.

Clemmys muhlenbergii inhabits open, sunlit bogs, fens, and marshes characterized by a diverse array of sedges, mosses, rushes, grasses, forbs, and low shrubs, and by substrates of mucky organic soil kept saturated by perennial groundwater seepage. Water levels fluctuate at most several inches seasonally.

One major factor affecting *Clemmys muhlenbergii* populations is degradation of habitat by invasive and/or exotic plant species. Closure of the canopy by woody vegetation or tall, monocultural herbs reduces and eventually eliminates nesting habitat in addition to drastically altering wetlands ecology. Stormwater discharges may facilitate such habitat degradation through introduction of pollutants or other causes. For example, stormwater outfalls introduce coarse sediments, eroded from areas undergoing development, that destroy the fine-textured organic substrate that *Clemmys muhlenbergii* requires, and facilitate establishment of invasive species. Stormwater surges can cause irreparable hydrologic and physical damage to spring-fed wetlands. One study documented how deep channels, cut through an emergent wetland by a poorly designed and located stormwater outfall in Gloucester County, drained the surface soils and made the hydrology and vegetative community totally unsuitable for *Clemmys muhlenbergii.*

The Department's Statewide evaluations of the suitability of wetland habitat for *Clemmys muhlenbergii* revealed that wetlands receiving direct stormwater runoff possess a greater percentage of invasive species than wetlands where there is no stormwater outfall. These invasive species are most abundant at the direct point of stormwater discharge. Common Reed (Phragmites australis) and Purple Loosestife (Lytrum salccaria), two of the most pernicious of all invasives, are notorious for their ability to colonize earth disturbed for installation of outfall structures in or adjacent to a wetland and then spread throughout the wetland. Storm sewers and outfall structures also provide attractive cover and potential dens for predators, which are major threats to *Clemmys muhlenbergii*.

Although *Clemmys muhlenbergii* depends upon constant successional cycling of wetlands from fen to swamp to pond to fen etc., the sere that *Clemmys muhlenbergii* exploits is a stable biological community devoid of severe hydrologic shifts and rapid changes in vegetative communities which often occur in wetlands receiving direct stormwater runoff. Wetlands occupied by *Clemmys muhlenbergii* warrant deliberate and careful planning regarding the placement and design of stormwater outfalls. Additional background (including scientific references) about the impacts of stormwater discharges on *Helonias bullata* and *Clemmys muhlenbergii* is contained in two memoranda that are available from the Division of Watershed Management, Department of Environmental Protection, P.O. Box 418, Trenton, New Jersey 08625.

Proposed N.J.A.C. 7:8-5.2(d) provides an exemption from meeting the performance standards for groundwater recharge, stormwater runoff quantity, and stormwater runoff quality at N.J.A.C. 7:8-5.4 and 5.5 for specific linear development projects. Proposed N.J.A.C. 7:8-5.2(d)1 provides an exemption for the construction of an underground utility line, if the disturbed areas are revegetated upon completion. Proposed N.J.A.C. 7:8-5.4(d)2 provides an exemption for above-ground utility lines provided that existing conditions are maintained to the maximum extent practicable. Proposed N.J.A.C. 7:8-5.2(d)3 provides an exemption for the construction of a public pedestrian access, provided that the access is made of permeable material. The impact of the change in land uses for utility lines and permeable areas are minimal, and the majority of the

impact will be mitigated by the dispersed nature of the impact, as well as any surrounding vegetated areas. The construction of a stormwater management measure necessary to demonstrate compliance with the requirements at N.J.A.C. 7:8-5.4 and 5.5 may result in unnecessary and additional disturbance to existing vegetated areas, given the minimal impact of the linear development on stormwater quality, groundwater recharge, and stormwater quantity.

Proposed N.J.A.C. 7:8-5.2(e) provides waivers from strict compliance from meeting the performance standards for groundwater recharge, stormwater runoff quantity, and stormwater runoff quality at N.J.A.C. 7:8-5.4 and 5.5 for the enlargement of existing public roadways or railroads; or the construction or enlargement of a public pedestrian access. The provision for waivers from strict compliance for public roadways, railroads, and public pedestrian access recognizes that there are cases when due to limited areas owned or controlled by the applicant for a linear development, the requirements at N.J.A.C. 5.4 and 5.5 may not be feasible. However, in order to receive the waiver from strict compliance, the applicant must demonstrate specific conditions.

The first condition under proposed N.J.A.C. 7:8-5.2(e)1 is to demonstrate that there is a need for the project that cannot be accomplished by any other means. This demonstration requires information about necessity for the project at the location chosen, including alternatives analyses.

The second condition under proposed N.J.A.C. 7:8-5.2(e)2 is to demonstrate through alternatives analysis, that the option selected complies with the requirements at N.J.A.C. 7:8-5.4 and 5.5 to the maximum extent practicable, through the use of nonstructural and structural stormwater management strategies and measures. This condition makes clear, that although the entire project may not meet the groundwater recharge, stormwater runoff quantity, and/or the stormwater runoff quality performance standards, the applicant continues to be responsibility for meeting the criteria as much as possible on the site.

The next condition under proposed N.J.A.C. 7:8-5.2(e)3 is to demonstrate that, in order to meet the requirements at N.J.A.C. 7:8-5.4 and 5.5, the applicant must condemn existing structures currently in use, such as homes and buildings. This condition recognizes that, due to limited areas for the construction of stormwater management measures, it may not be feasible to meet the requirements at N.J.A.C. 5.4 and 5.5 for these projects of public significance. The applicant must evaluate all options to meet the criteria to the maximum extent practicable including purchasing or condemning additional land for stormwater management measures. However, the applicant does not need to include in the evaluation of areas for purchase or condemnation areas where it would be necessary to remove an existing structure, such as a house or building, that is in use.

The last condition under proposed N.J.A.C. 7:8-5.2(e)4 is to demonstrate that the applicant does not own or have rights to other areas, within the upstream drainage areas of the receiving stream, that would provide additional opportunities to mitigate for requirements of N.J.A.C. 7:8-5.4 and 5.5 that were not achievable on-site. This condition recognizes that this waiver from strict compliance applies, for the most part, to applicants that control areas more than the site on which they propose construction under this waiver. It also recognizes that there may be sites controlled by the applicant that could be retrofitted so that throughout the drainage-area, the performance standards are met, and the impact of the development minimized.

N.J.A.C. 7:8-5.3 Nonstructural stormwater management strategies

The objective of Subchapter 5 is to prevent or minimize the environmental impacts of stormwater. The environmental impacts of stormwater cannot be effectively prevented or minimized unless solutions are incorporated during the design phase of the development**.** In the past, many stormwater controls were designed to get runoff as quickly as possible from where the rain fell, into storm drains, basins, and then into a waterbody. As the amount of developed land has dramatically increased, past practices have often been found to be insufficient to address the impacts of stormwater runoff on erosion, flooding and water quality as well as loss of groundwater recharge.

In certain cases, past practices have resulted in the exacerbation of the problem they were designed to solve.

The Department emphasizes the use of nonstructural strategies in this proposal to minimize the negative impacts of development on water, land and biota. Proposed N.J.A.C. 7:8-5.3 identifies nonstructural stormwater management strategies intended to reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, maintain or reproduce as closely as possible the natural hydrologic cycle, and minimize the discharge of stormwater-related pollutants (including, but not limited to, total suspended solids and nutrients). These measures, some of which simulate natural drainage features or maintain or reproduce as closely as possible natural hydrologic and vegetative conditions, must be incorporated into the design of major development. Proposed N.J.A.C. 7:8-5.3 replaces provisions concerning nonstructural stormwater management strategies in existing N.J.A.C. 7:8-3.4(a)4, N.J.A.C. 7:7E-8.7(b), and N.J.A.C. 7:13-2.8(c).

Proposed N.J.A.C. 7:8-5.3 (a) requires that the applicant must identify the nonstructural strategies incorporated into the design of the project. Nonstructural stormwater management strategies provide the opportunity to address the impacts of stormwater through prevention. Incorporating nonstructural stormwater management strategies can help maintain the qualitative and quantitative characteristics of the site runoff through environmentally sensitive planning and source control. Proposed N.J.A.C. 7:8-5.3(a) further requires that if the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management strategies identified in N.J.A.C. 7:8-5.3(b) below into the design of a particular project, the applicant must identify the measure and provide a basis for the contention. This requirement will assure that the use of nonstructural strategies are fully considered in the design of the project.

Nonstructural stormwater management strategies identified under proposed N.J.A.C. 7:8-5.3(b) are part of proper and environmentally sound site design. Additional guidance for

nonstructural stormwater management strategies are available in the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual).

One nonstructural stormwater management strategy is to protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss (such as near-watercourse vegetation,) as stated in proposed N.J.A.C. 7:8-5.3(b)1. Vegetation is of particular value near waterbodies, in part because soil eroded near waterbodies is often readily conveyed to those waterbodies; vegetation near waterbodies often provides the final opportunity to filter pollutants in runoff or flood waters. In addition, once vegetation near waterbodies is disturbed, shoreline and streambank erosion often increase dramatically. Such vegetation is often difficult to re-establish. Moreover, vegetation near waterbodies often provides additional water quality benefits by moderating waterbody temperatures through shading and by providing food and cover for aquatic biota.

Proposed N.J.A.C. 7:8-5.3(b)2 provides for minimizing impervious surfaces and breaking up or disconnecting the flow of runoff over impervious surfaces as another element of proper and environmentally sound site design. Studies and data show a high correlation between degree of development/urbanization and adverse impacts on receiving waters due to stormwater. The minimization and disconnection of impervious cover reduces the volume and peak of runoff, promotes infiltration and groundwater recharge, and preserves baseflow, which has a direct correlation to the integrity of stream ecology. In addition, this reduces the volume of stormwater that would need to be treated to achieve water quality objectives at the end-of-pipe.

An often closely related element of sound stormwater site design, identified in proposed N.J.A.C. 7:8-5.3(b)3, is maximizing the protection of natural drainage features and vegetation. In general, vegetation (if stable) effectively controls erosion of the underlying soil, reduces the volume and velocity of runoff, and to some extent filters pollutants from runoff. In addition, destruction of natural vegetation often destroys mature trees that are an inherently valuable attribute

of a site. Once disturbed, natural drainage features often become high-energy conduits for gully erosion, and for moving large amounts of runoff and pollutants directly to waterbodies.

Another related element in site design for effective stormwater control is minimizing the decrease in the pre-construction time of concentration, under proposed N.J.A.C. 7:8-5.3(b)4. The United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Technical Release 55 (TR-55), Urban Hydrology for Small Watersheds defines the "time of concentration" as the time for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed. (NRCS, 1986). In general, the time of concentration is one of the significant factors affecting stormwater runoff. A reduction in the time of concentration will result in stormwater leaving the site faster and in greater quantity, usually resulting in higher peak flows in the receiving watercourse which translates to increased flooding and erosion downstream of the site. Accordingly, it is important that any decrease in the time of concentration as a result for development be minimized to control these negative impacts.

Proposed N.J.A.C. 7:8-5.3(b)5 provides another element of proper and environmentally sound site design; minimizing land disturbance activities including clearing and grading. Such activities often increase the amount of bare, disturbed soil that is highly susceptible to erosion. Soil disturbance can increase soil compaction, and the change in vegetative cover on land that has been graded and cleared can result in an unnecessary increase in stormwater runoff that has to be treated. While there are instances where clearing and grading may be environmentally beneficial, such as streambank erosion control measures, in general these activities should be minimized. In those instances where environmental benefits exist, the applicant may utilize these methods after justifying their use under N.J.A.C. 7:8-5.3(a).

A nonstructural site design strategy identified under proposed N.J.A.C. 7:8-5.3(b)6 is minimization of soil compaction. Studies have shown the compaction may result in higher than expected runoff volumes from vegetated areas. Poor soil health, which impacts the health of the biota, may also result. Guidance for preventing and alleviating soil compaction is available in the

Standards for Soil Erosion and Sediment Control in New Jersey at N.J.A.C. 2:90 and in the NJ BMP Manual.

Proposed N.J.A.C. 7:8-5.3(b)7 provides that the site design should provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides. Landscaping choices can play a significant role in reducing the impacts of stormwater runoff due to development. Generally, trees and shrubs result in lower volumes of runoff than lawn areas and require less application of fertilizers and pesticides. Commonly, lawns receive frequent, substantial applications of fertilizers and pesticides that may have adverse consequences, including transport by runoff to surface waters or by groundwater recharge. Lawns also provide fewer water quality benefits near waterbodies than native vegetation provides and often use more water from landscape irrigation.

A nonstructural stormwater management strategy identified under N.J.A.C. 7:8-5.3(b)8 is to provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas. Properly designed vegetated open channel conveyance systems and stormwater runoff discharges into and through vegetated areas provide the opportunity for collected runoff to infiltrate and recharge closer to the location of where the rain fell. In addition, stable vegetation effectively controls erosion of the underlying soil, reduces the volume and velocity of runoff, and, to some extent, filters pollutants in runoff. This measure is closely related to disconnection of impervious cover mentioned above.

Another category of nonstructural stormwater management strategy is site design features for preventative source controls as set forth in proposed N.J.A.C. 7:8-5.3(b)9. Preventative source controls prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of pollutants into stormwater runoff.

Proposed N.J.A.C. 7:8-5.3(b)9i and 9ii lists as preventative source controls features that help to prevent accumulation of trash or debris in drainage systems, and features to help prevent

discharge of trash and debris from the drainage systems into the waterbody. Trash and debris can add pollutants to flows discharged from drainage systems, and impair the ability of drainage structures to function. The Department recognizes that temporary accumulations of trash and debris may be inevitable at locations such as trash racks or stormwater management basins, which trap pollutants and preserve the function of drainage structures. Removing trash and debris is part of the preventive maintenance required under N.J.A.C. 7:8-5.8.

A third type of preventative source control identified in proposed N.J.A.C. 7:8-5.3(b)9iii is to include site design features that help prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments that could be exposed to stormwater runoff. Of particular concern are spills or other harmful accumulations of liquids and solids that are easily soluble in or otherwise readily transported by stormwater. Such liquids and solids may be derived from a variety of sources including fueling and maintenance of vehicles and other machinery; trash, animal waste, waste motor oil, and other kinds of waste materials; storage or other handling of landscape and garden chemicals (including fertilizers and pesticides) at retail stores; and storage or other handling of raw materials, intermediate products, final products, and by-products at warehouses or manufacturing plants.

Proposed N.J.A.C. 7:8-5.3(b)9iv provides a final example of preventative source control; application of fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act and implementing rules, when establishing vegetation after land disturbance. Compliance with those requirements ensures that there are enough nutrients to establish vegetation required for erosion control. Not complying with those requirements may result in unnecessary discharge of nutrients to waters of the State or in the failure to establish vegetation, which could result in soil erosion and discharge of sediment and other pollutants.

The Department expects that in some circumstances (depending on the nature of the development), other preventative source controls would be implemented through elements of site design besides those identified in proposed N.J.A.C. 7:8-5.3(b)9. For example, site design can

include trash receptacles and/or covered, watertight and leak proof dumpsters whose use would help to keep pavement clean and prevent accumulations of trash, debris, and pollutants in drainage systems and elsewhere. Site design can also include structures or structural features to contain or facilitate containment of spills, or to prevent exposure of vehicle maintenance or material handling areas to stormwater by locating such areas under a roof. A structure or structural feature whose only important function is to contain or facilitate containment of rare or occasional spills rather than to control the quality or quantity of stormwater from most storm events is not a "structural stormwater management measure" for purposes of proposed N.J.A.C. 7:8-5. Similarly, although a roof is a structure, it is not a "structural stormwater management measure" for purposes of proposed N.J.A.C. 7:8-5 unless it is designed to provide rooftop storage of stormwater runoff.

Proposed N.J.A.C. 7:8-5.3(b)9 is consistent with the Department's goal of moving from end-of-pipe treatment as the primary pollution control strategy to source reduction and pollution prevention as a more cost-effective and environmentally sound regulatory strategy. While pollution prevention may not be appropriate or attainable in all cases, the Department believes that efforts should be made to include pollution prevention site design features in the design of the project. Preventative source practices are especially important for some dissolved or colloidal pollutants that are not substantially removed by the majority of structural controls that are commonly applied to stormwater.

The Department also expects that in some circumstances (depending on the nature of the development or project), preventive source controls listed in proposed N.J.A.C. 7:8-5.3(b)9 would be implemented at least in part by implementing a design for post-construction management of the development or project. A wide variety of prohibitions, maintenance procedures, operating procedures, and other management practices can be implemented after developments or projects are built to prevent or remove accumulations of trash and debris in drainage systems; prevent the discharge of trash and debris into water bodies; and prevent, contain, and clean up spills or other harmful accumulations of pollutants. Some examples include prohibitions on improper disposal or discharge of trash, animal waste, motor oil, and other kinds of waste materials. Other maintenance

practices are pavement sweeping, cleaning procedures that do not flush pollutants into receiving waters, and covering materials of concern at commercial, public, or industrial facilities with tarpaulins. Good housekeeping and preventative maintenance also include filling and material transfer procedures and equipment that minimize spills and prompt use of appropriate spill response equipment, spills occur. Where appropriate, provisions to implement preventive source controls after the development or project is built can be included in ordinances or regulations, permit conditions, deed restrictions, lease agreements, operation and maintenance manuals, or other documents.

Proposed N.J.A.C. 7:8-5.3(c) provides that any land area used as a non-structural stormwater management measure to meet the performance standards in proposed N.J.A.C. 7:8-5.4 and 5.5 must be dedicated to a government agency, placed in conservation restriction, or deed-restricted to ensure the maintenance of that measure. Structural measures used to meet the requirements for the performance standards are easily identifiable due to the pipes, outlet structures, and associated depression inherent in structural stormwater management measures. On the other hand, nonstructural strategies include maintaining vegetation and forested areas, small depressions for stormwater storage, and rooftop runoff that is not connected to the gutter of the nearest road. Nonstructural strategies are more difficult to identify and are more likely to be removed by people unaware of the value of the measure. This requirement provides the tool for those responsible for the nonstructural strategy to be aware of the conditions for the use of a nonstructural stormwater management strategy, and the maintenance responsibilities for the proper functioning of that measure.

As indicated in proposed N.J.A.C. 7:8-5.3(d), guidance for nonstructural stormwater management strategies are available in the New Jersey Stormwater Best Management Practices Manual.

N.J.A.C. 7:8-5.4 Erosion control, groundwater recharge and runoff quantity control standards

Proposed N.J.A.C. 7:8-5.4 sets forth minimum design and performance standards to control erosion impacts, encourage and control stormwater infiltration and ground water recharge, and control stormwater runoff quantity impacts of major development. N.J.A.C. 7:8-5.4 replaces corresponding provisions in existing N.J.A.C. 7:8-3.4(a)1, 7:7E-8.7(c), and 7:13-2.8(a) concerning stormwater runoff quantity and erosion control. The minimum standards in N.J.A.C. 7:8-5.4(a)1 for erosion control (including control of sediment produced by erosion) are those established under the Soil Erosion and Sediment Control Act at N.J.S.A. 4:24-39 et seq. and implementing rules, N.J.A.C. 2:90-1 and N.J.A.C. 16:25A-1 and 2.

Most of the current standards focus on the impacts of stormwater on flooding and downstream erosion, with an emphasis on end-of-pipe treatment to alleviate the impacts of development. However, little emphasis has been placed on the impacts that result from the loss of groundwater recharge. Groundwater recharge contributes to aquifer recharge and stream baseflow.

Proposed N.J.A.C. 7:8-5.4(a)2i sets forth minimum design and performance standards for groundwater recharge. Groundwater recharge is the water that infiltrates into the soil, and is not removed by evapotranspiration. “The water that seeps into the soil is infiltration. Part of the water that does infiltrate is returned to the atmosphere through evapotranspiration. Evapotranspiration refers to water that is returned to the atmosphere from vegetated areas by evaporation from the soil and plant surfaces (dew and rain) and soil water that is taken up by plant roots and transpired through leaves or needles. Infiltrated water that is not returned to the atmosphere by evapotranspiration moves vertically downward and, upon reaching the saturated zone, becomes ground water. This ground water could be in geologic material that is either an aquifer or non-aquifer, depending on whether it can yield satisfactory quantities to wells.” (New Jersey Geological Survey Geological Survey Report GSR-32: A Method for Evaluating Ground-Water-Recharge Areas in New Jersey, 1993)

Ground water feeds the aquifer and baseflow to streams and wetlands, which impacts the ecology and geomorphology of the receiving waters. This proposed recharge standard recognizes the importance of groundwater recharge to the health of receiving streams and wetlands.

Proposed N.J.A.C. 7:8-5.4(a)2 provides two options for satisfying the recharge performance standard. The first option is to demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual pre-construction groundwater recharge volume for the site. This standard will prevent the loss of pre-construction groundwater recharge from development, which occurs through the use of traditional stormwater management measures that collect and directly discharge stormwater to the watercourse.

The second option is to demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated. The option to infiltrate the increase in the 2-year storm will result in the recharge of more water than the first option and will result in maintaining the existing runoff volume for the 2-year storm event. This option may provide additional environmental benefits such as compensating for loss of pre-existing groundwater recharge due to existing development in the drainage area, while allowing the design engineer the option of utilizing a standard storm event to meet this criteria. Some local and regional stormwater regulations (such as the Pinelands Comprehensive Management Plan) may require the infiltration of storm events equal to or greater than the 2-year storm event. The second option would allow calculations for those local and regional stormwater requirements to be utilized to demonstrate conformance to the recharge standard.

Proposed N.J.A.C. 7:8-5.4(a) 2ii provides that the groundwater recharge performance standard shall not be applied to projects that qualify as urban redevelopment. These area are defined at N.J.A.C. 7:8-1.2 to be areas that generally have high population density areas, high percentage impervious cover and existing infrastructure as defined by the State Development and Redevelopment Plan as Metropolitan Planning Areas (PA1), Designated Centers, Cores and Nodes

and Urban Enterprise Zones and Urban Coordinating Council Empowerment Neighborhoods. The reason for this waiver is to eliminate obstacles to reinvestment and redevelopment of State urban areas and to implement policies consistent with the Governor's Smart Growth initiative. This waiver also acknowledges that these areas have a limited recharge capability due to the high percent of impervious cover and or the presence of contaminated soils as a result of former land uses. In addition, in order to ensure the protection of environmentally sensitive features, which may exist in these areas, the Department has excluded environmentally critical or constrained areas from the waiver option.

Proposed N.J.A.C. 7:8-5.4(a) 2iii(1) provides additional limitations on the types of stormwater that may be recharged unless specifically directed by the Department. Stormwater runoff shall not be recharged from high pollutant loading areas. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied; areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than “reportable quantities” as defined by the United States Environmental Protection Agency (EPA) in the Code of Federal Regulations (40 CFR 302.4); areas where recharge would be inconsistent with Department approved remedial action work plan or landfill closure plan, and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities.

In addition, proposed 7:8-5.4(a)2iii(2) provides that industrial stormwater runoff exposed to “source material” shall not be recharged. “Source materials” means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

Proposed N.J.A.C. 7:8-5.4(a)2iv provides that the design engineer must assess the hydraulic impact of the groundwater recharge measure on the ground water table and design the site to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include exacerbating a high water table such that surficial ponding occurs, flooding of basements, or interference with the proper operation subsurface structures such as sewage disposal systems. This is a demonstration that impacts of the proposed groundwater recharge measure on the ground water would not result in adverse hydraulic impacts to structures. Additional guidance for the analysis of the impact of infiltration and groundwater recharge structures on the groundwater table is available in the NJ BMP Manual.

Proposed N.J.A.C. 7:8-5.4(a)3 provides requirements for stormwater runoff quantity control. The standards in proposed N.J.A.C. 7:8-5.4(a)3 for stormwater runoff quantity control differ considerably from the existing N.J.A.C. 7:8-3.4(a)1 standard for "Flood and erosion control," which requires that "after development the site will generate no greater peak runoff from the site than prior to development, for a two-year, 10-year, and 100-year storm." The current requirement addresses runoff rates only and does not account for changes to the volume and timing of stormwater. The combination of the discharges from the many sites along a stream result in increased flooding and erosion, due to the increased stormwater runoff volume and the modified timing and duration of the stormwater runoff. Therefore, since increased runoff volume from new developments and projects (and the speed and the duration of this volume as it reaches the watercourse) is the main source of increased flooding, the requirement of maintaining peak discharge rates (without addressing volume) has proven not to control flooding. In fact, the current requirement has been shown to increase flooding under certain circumstances. In contrast, the proposed stormwater runoff standards address the increase in stormwater volume from development, as well as the impacts of the timing of the stormwater.

The design engineer can satisfy the standards in proposed N.J.A.C. 7:8-5.4(a)3 by choosing one of three options. The first option (N.J.A.C. 7:8-5.4(a)3i) is to demonstrate that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100-year storm events do

not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events. In other words, it must be demonstrated that for each of the storm events, the post-construction runoff rate of stormwater leaving the site at each point in time after the onset of the storm event does not exceed the pre-construction runoff rate at the same point in time. This demonstration ensures that there will be no increased rate or volume of stormwater runoff and also ensures that there will be no change in timing of stormwater runoff that could increase flood damages. This option can be feasible in highly urban areas where the total impervious cover of the site will remain the same or be reduced from the pre- to post-construction conditions, or where site conditions are and will remain particularly favorable for stormwater infiltration and groundwater recharge. If this option is not feasible, one of the other two remaining options can be used to meet the requirement.

Although worded differently, this demonstration is similar to existing proposed N.J.A.C. 7:13-2.8(a)1i, a stormwater control option originally established in the Flood Hazard Area Control Act rules that were promulgated in 1995. However, N.J.A.C. 7:8-5.4(a)3i clarifies that the post-construction runoff rate at each point in time after the onset of the storm event does not exceed the pre-construction runoff rate at the same point in time. This provision codifies the Department's existing practices.

The second option at proposed N.J.A.C. 7:8-5.4(a)3ii is to demonstrate that there is no increase, as a result of the development, in the peak runoff rates of stormwater leaving the site for the 2, 10, and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damages (including damage to natural systems as well as man-made features or human activities) at or downstream of the site. Under this option, the analysis must address impacts of existing land uses and projected land uses assuming full development under existing zoning. If this demonstration is not feasible, the design engineer should consider the third option instead.

The third option at proposed N.J.A.C. 7:8-5.5(a)3iii is to design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100-year storm events are 50, 75

and 80 percent, respectively, of the pre-construction peak runoff rates. This third option, with the exception of 80 percent reduction standard for the 100-year storm event, was originally established in the Coastal Zone Management rules that were promulgated in 1994 (existing N.J.A.C. 7:7E-8.7(c)3i) and the Flood Hazard Area Control rules that were promulgated in 1995 (existing N.J.A.C. 7:13-2.8(a)1ii). The reduction standard for the 100-year storm event is proposed to change from 75 percent in the Coastal Zone Management rules and Flood Hazard Area Control rules to 80 percent, based on the analysis performed by New Jersey Institute of Technology (NJIT) for the 80 percent reduction standard in the Residential Site Improvement Standards at N.J.A.C. 5:21-7.5(d)3. The analysis performed by NJIT supported the proposed 80 percent reduction standard as a method to minimize downstream flooding and erosion. The NJIT study indicated that hydrologic and hydraulic analysis at the watershed level was a more effective method of minimizing floods and erosion. The percentage reduction standards in proposed N.J.A.C. 7:8-5.4(a)3iii provide a simplified method that requires no calculations other than calculations of peak runoff rates of stormwater leaving the site.

Proposed N.J.A.C. 7:8-5.4(a)3iii also includes language which makes it clear that the percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. This practice is consistent with the way that current regulations regarding reduction in peak discharges are being applied.

In addition, proposed N.J.A.C. 7:8-5.4(a)3iii provides that the percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge. Such damages may be caused either by flooding of tidal waters or by flooding of a drainage system that conveys stormwater runoff to tidal waters. This provision recognizes that stormwater runoff does not contribute to flooding of some tidal waters (for example, the waters specifically identified in existing N.J.A.C. 7:7E-8.7(c)2ii(1) through (5)). This is recognized in the Coastal Zone Management rules at N.J.A.C. 7:7E-8.7(c)2ii. Unlike existing N.J.A.C. 7:7E-8.7(c)2ii, however,

proposed N.J.A.C. 7:8-5.4(a)3iii also recognizes that stormwater runoff may be conveyed to such tidal waters from a development or project that is not adjacent or along such tidal waters through a stormwater drainage system (such as a storm sewer) that is not a stream or other "waters of the State," and that the increased volume of stormwater runoff may or may not increase flood damage due to flooding of that drainage system.

Proposed N.J.A.C. 7:8-5.4(b) continues with editorial clarifications the requirements in existing N.J.A.C. 7:8-3.4(a)1 concerning new agricultural development that meets the definition of "major development". The proposed rule language recognizes that the Soil Conservation Districts also has jurisdiction over major development that meets the definition of "new agricultural development."

N.J.A.C. 7:8-5.5 Stormwater runoff quality control standards

Proposed N.J.A.C. 7:8-5.5(a) sets forth minimum design and performance standards to address post-construction stormwater runoff quality impacts of major development. "Post-construction" means that construction has been completed and the site has been properly stabilized using permanent vegetative and/or structural erosion and sediment control practices. Whereas the standard for water quality control in existing N.J.A.C. 7:8-3.4(a)2 is expressed in terms of retention periods for, or infiltration of, the water quality design storm, proposed N.J.A.C. 7:8-5.5 consists of standards for control of total suspended solids (TSS) and nutrients generated from the water quality design storm, and a standard to protect FW1 waters. There are practices and mechanisms (filtration, for example) besides retention and infiltration that substantially reduce pollutants in stormwater runoff. Proposed N.J.A.C. 7:8-5.5(a) is based on a reduction of the total annual load, and does not apply to TSS and nutrient loads generated from any storms greater than the water quality design storm.

Under proposed N.J.A.C. 7:8-5.5(a), stormwater management measures shall be designed to reduce the post-construction load of TSS from the water quality design storm, by 80 percent, expressed as an annual average. The 80 percent TSS reduction standard in N.J.A.C. 7:8-5.5(a) replaces the narrative of TSS reduction standards in existing N.J.A.C. 7:7E-8.7(c)4 and 7:13-2.8(b)1. Because extended detention basins are credited with a maximum 60% TSS removal rate (See Table 2 at proposed 5.5(c) discussed below), the use of an extended detention basin alone to remove TSS will not be sufficient to meet the 80% TSS reduction standard. Infiltration basins and wet ponds can continue to be used as a stand-alone BMP. Additional BMPs that are not currently recognized to meet existing water quality requirements have been included as options to address the water quality performance standard for reduction of post-construction TSS by 80% and reduction of nutrients to the maximum extent practicable.

The Department recognizes that TSS reduction efficiency fluctuates. Stormwater management measures that are designed to reduce TSS loads generated from the water quality design storm by 80 percent expressed as an annual average are not necessarily designed to reduce TSS loads by 80 percent for every individual storm event. In addition, site removal rates may vary depending upon the total loading of the Total Suspended Solids, and other site factors.

The TSS reduction standard in proposed N.J.A.C. 7:8-5.5(a) does not apply to any land that will deliberately be retained in a continuously or frequently disturbed condition after construction has ceased (for example, land in mining developments). TSS from such land will instead be controlled by applying the minimum standards for erosion control.

The 80 percent TSS reduction standard in proposed N.J.A.C.7:8-5.5 is consistent with the 80 percent reduction value for average annual TSS loadings that is part of “New Development Management Measure” for urban runoff contained in the “Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters” published by USEPA pursuant to Section 6217(g) of the Coastal Zone Management Act Reauthorization Amendments of 1990, 16 U.S.C. 1455b(g). In response to this program, New Jersey developed a coastal nonpoint source

management program that includes implementation of management measures over a large majority of the State. Federal guidance indicates that USEPA selected the 80 percent reduction value based on the following factors:

1. Removal of 80 percent of total suspended solids (TSS) is assumed to control heavy metals, phosphorus, and other [TSS-associated] pollutants (and to control TSS itself);

2. A number of coastal States, including Delaware and Florida ... require and have implemented a TSS removal treatment standard of at least 80 percent for new development; and

3. Analysis has shown that constructed wetlands, wet ponds, and groundwater recharge basins can remove 80 percent of TSS, provided they are designed and maintained properly. Other practices or combinations of practices can be also used to achieve the goal.

The water quality design storm specified in proposed N.J.A.C. 7:8-5.5(a) for TSS and nutrients is 1.25 inches of rainfall falling in two hours. This is a change from the existing N.J.A.C. 7:8-3.4(a)2i (and existing 7:7E-8.7(d)1iii(1)), which defines the water quality storm as "either a one-year frequency, 24 hour storm using the rainfall distribution recommended by the U.S. Soil Conservation Service or a storm of 1¼ inches of rainfall in two hours". The water quality design storm was originally proposed solely for the design of extended detention basins, which was the main management practice to remove suspended solids, the targeted pollutant at that time. The choice of two storms was provided to correspond to the two major methods (rational and US Soil Conservation Service), of calculating the inflow hydrographs for the basin design. Based on the data available at the time and the then current theories on stormwater quality treatment, the differences in the hydrographs for the two storms was not felt to be significant in either treatment efficiency or cost.

The Department is not proposing to continue to allow use of the one-year frequency, 24-hour storm in order to calculate the TSS removal. The two different distributions for the water

quality storm result in differences in the volume and peaks of the water quality design storm. In order to remove the ambiguity, the decision was made to use one design storm.

The distribution of the water quality design storm proposed as reflected in Table 1 of proposed N.J.A.C. 7:8-5.5 is different than the water quality storm in N.J.A.C. 5:21-7.6 and N.J.A.C. 7:13-2.8(b)1 which defines the water quality storm as 1.25 inches falling uniformly in two hours. The distribution of the present water quality design storm is based upon a constant or uniform rate of rain over its two-hour duration. Since its development, the Design Storm has provided a sound basis for the design of stormwater quality treatment facilities that require an estimate of the total runoff volume that will flow to the facility. Due to its uniform rainfall rate assumption, the Design Storm has more limited application in the design of facilities that also require an accurate estimate of the peak rate of runoff that will flow to it. However, until recently, the design of the most commonly used treatment facilities did not require a peak runoff rate estimate.

Recent developments in the field of stormwater quality management have led to an increase in the number of treatment facilities that require an accurate estimate of the peak rate of incoming runoff. For this reason, the Water Quality Design Storm reflected in the existing rules is proposed to be modified by changing its uniform or linear rainfall distribution to a nonuniform one. The proposed nonuniform rainfall distribution will enable the Design Storm to provide estimates of both total runoff volume and peak runoff rate for the same frequency storm event. In other words, the same frequency storm that is being addressed by the volume device under the present Water Quality Design Storm will be the same frequency storm that is addressed for both volume and flow devices under the new Water Quality Design Storm distribution. The rainfall distribution in Table 1 was developed by changing the uniform intensity in the present two-hour storm event to a variable one. The new variable intensity distribution was achieved by utilizing rainfall intensities for various durations, up to two hours, that have the same frequency as the overall storm event of 1.25 inches in two hours. The variable intensities were distributed symmetrically over the two hours, with each centered about the middle of the storm.

The majority of BMPs are sized based on the volume of runoff. However, certain BMPs (such as specific manufactured treatment devices) base the sizing of the BMP on peak flows, and using the 1.25" falling uniformly in two hours is less protective for peak than for volume. Therefore, a modification of the rainfall distribution is proposed.

Proposed N.J.A.C. 7:8-5.5(b) identifies presumed removal rates from certain BMPs designed in accordance with the NJ BMP Manual as shown in Table 2. The removal rates shown in Table 2 represent appropriate removal rates for each BMP, based on literature values and the best professional judgment of the BMP Technical Committee. TSS reductions shall be calculated based on the removal rates in Table 2. It shall be assumed that if any of the stormwater management measures identified in Table 2 of N.J.A.C. 7:8-5.5(c) are sited, designed, constructed and maintained to the standards listed in the NJ BMP Manual, that measure will achieve the removal rates cited in Table 2. However, the design engineer has the opportunity to demonstrate that a BMP would achieve removal rates other that those listed in Table 2, or that different methods will satisfy the required removal rate. If the Department is not the review agency, a copy of the documentation and the decision made by the review agency regarding alternative BMP removal rates or BMP design must be provided to the Department.

The stormwater management measures shown in Table 2 do not all achieve the targeted 80% TSS removal from post-construction loading, and it may be necessary to place two BMPs in series to achieve the target rate. Proposed N.J.A.C. 7:8-5.5(c) gives the formula determining the total removal rate for two BMPs in series, which is the maximum required to achieve 80% TSS based the TSS Removal Rates listed in Table 2. The equation for the total removal rate (R) for two BMPs in series is $R = A + B - (AXB)/100$, as shown in proposed N.J.A.C. 7:8-5.5(c).

The formula is for the total removal rate is derived as follows. If more than one BMP is needed, then the removal rate of the secondary BMP should be applied to the fraction of the

pollutant remaining after the runoff has passed through the first BMP. An example is provided below:

The first BMP is an extended detention basin with a TSS removal rate of A or 60% (0.60). The second BMP is a vegetative filter strip with a TSS removal rate of B or 50% (0.50). First apply the first removal rate (A) to achieve the TSS load remaining after the first BMP.

1.0 TSS X 0.60 TSS removal rate = 0.60 *TSS removed by 1st BMP* ***OR***

1.0 TSS X A TSS removal rate = A *TSS removed by 1st BMP*

1.0 TSS - 0.60 TSS removed = 0.40 *TSS after 1st BMP* ***OR***

1.0 TSS - A TSS removed = (1.0 - A) *TSS after 1st BMP*

Then apply the second removal rate on the TSS load remaining after the treatment of the first BMP.

0.4 *TSS after 1st BMP* X 0.50 TSS removal rate = 0.20 *TSS removed by 2nd BMP* ***OR***

(1.0 - A) *TSS load after 1st BMP* X B TSS removal rate = (1.0-A) X B *TSS removed by 2nd BMP*

To calculate total removal rates, add the amount removed by the first BMP to the amount removed by the second BMP.

Total TSS Removal = 0.60 *TSS removed by 1st BMP* + 0.20 *TSS removed by 2nd BMP* ***OR***

Total TSS Removal = A *TSS removed by 1st BMP* + (1.0-A) X B *TSS removed by 2nd BMP*

The equation simplifies to Total TSS Removal R = A + B – (A X B). In order to use the percentage of removal rates instead of the decimal values of the removal rates, the equation is adjusted to R = A + B – (A X B)/100, as shown in proposed N.J.A.C. 7:8-5.5(c).

Proposed N.J.A.C. 7:8-5.5(d) specifies how TSS reduction is to be calculated if there is more than one onsite drainage area. In that case, the 80% TSS removal rate applies to each drainage area on site unless the subareas converge onsite. Where the subareas converge onsite, the removal rate can be demonstrated through a calculation using a weighted average. This allows the design engineer to use composite average annual removal rates provided that it results in the required water quality performance for the site.

Pursuant to proposed N.J.A.C. 7:8-5.5(e) stormwater management measures must be designed to reduce, to the maximum extent feasible, the post-construction nutrient load in

stormwater runoff generated from the water quality design storm. This standard is included because nutrients are a major class of pollutants in stormwater runoff from many kinds of development. Nutrients can be controlled through environmentally sensitive site design and pollution prevention, as well as the prioritization of nutrient issues in the design and selection of stormwater management measures. The design of the site must include structural and nonstructural strategies that optimize nutrient removal. Table 2 provides several BMPs that meet the TSS removal performance standard. On a specific site, there may be the opportunity to select one type of BMP above another for improved nutrient control and still meet the performance standards in proposed N.J.A.C. 7:8-5.4 and 5.5. Additional guidance regarding nutrient reduction is available in the NJ BMP Manual.

Designing stormwater management measures to achieve the standards in proposed N.J.A.C. 7:8-5.5 for TSS and nutrients will indirectly provide some control of other pollutants that are associated in varying degrees with TSS and nutrients, such as metals. Moreover, the preventive source controls required under proposed N.J.A.C. 7:8-5.3(b)9 are not limited to controls for TSS and nutrients. In the future, additional or revised design and performance standards for stormwater runoff quality control may be established as technology and science progress, and as regional stormwater management plans are adopted.

The standards in proposed N.J.A.C. 7:8-5.5 are minimum standards established for a wide variety of developments and projects and do not prevent the Department or other agencies or entities from applying stricter stormwater management requirements as allowed by statute (see N.J.A.C. 7:8-1.5(a)). Some new industrial facilities, for example, may be subject to more stringent requirements (for example, more stringent TSS requirements, specific requirements for pollutants other than TSS or nutrients, or larger water quality design storms) under the NJPDES rules, or as otherwise warranted by the nature of the industrial materials that may be exposed to stormwater at the facility.

Proposed N.J.A.C. 7:8-5.5(g) requires that stormwater management measures be designed to prevent any increase in stormwater discharge from anthropogenic activities to waters designated as FW1 in the Surface Water Quality Standards, N.J.A.C. 7:9B. FW1 waters are the most pristine waters in the State, the majority of which are in public ownership. This provision is based on the definition of "FW1," in N.J.A.C. 7:9B-1.4 that prohibits increases in stormwater runoff from anthropogenic activities. The Department interprets this provision to apply to increases in both quantity and pollutant loading.

Proposed N.J.A.C. 7:8-5.5(h) provides special water resource protection measures for Category One waters. The Surface Water Quality Standards (SWQS) at N.J.A.C. 7:9B-1.4 define "Category One waters" as those special waters identified for protection from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. Surface waters are assigned a classification, for example freshwater (FW) or saline (S). N.J.A.C. 7:9B-1.12 provides a listing of the classification system. In addition, each surface waterbody is also assigned an antidegradation designation, for example nondegradation, Category One and Category Two. The SWQS at N.J.A.C. 7:9B-1.15 provide a listing of waterbodies and their classifications, including the antidegradation designation.

The antidegradation policies at N.J.A.C. 7:9B-1.5(d) are applicable to point source discharges in order to prevent degradation of water quality. However, the antidegradation policies do not currently apply to nonpoint source discharges or point source discharges that are nonpoint source in origin, such as from stormwater detention basins. For nonpoint source discharges and point source discharges that are nonpoint source in origin, the Department utilizes a "best management practices" or "BMP" approach to protect water quality. Although the proposed rules use the term "Category One," it is important to note that the usage of the term is limited to the identification of those waterbodies that are subject to the proposed provisions at N.J.A.C. 7:8-5.5(h). The usage of the term Category One is not intended to infer that the antidegradation policies for point source discharges to Category One waters are applicable under

this proposed Subsection. As discussed throughout this proposal, the Department will continue to rely on the BMP approach to prevent degradation of water quality from nonpoint sources, including from point sources that are nonpoint source in origin such as from stormwater detention basins or municipal separate storm sewers. Establishing special water resource protection areas is proposed as the best available and most reliable method to prevent degradation of Category One waters from nonpoint source pollution.

The water quality criteria and pollutant removal efficiency of BMPs established in the available literature and reflected in proposed N.J.A.C. 7:8-5.5 are based upon the ability of the BMP to remove Total Suspended Solids (TSS). This is sufficient in most streams to preserve water quality since removing TSS will also remove some of the other common nonpoint source pollutants. However, Category One waters need added protection due to their exceptional value and characteristics. Accordingly, in evaluating the most appropriate BMP to protect Category One waters bodies, the Department evaluated pollutants other then TSS such as sediment, nutrients, pathogens, pesticides, toxic chemicals, salts, hydrocarbons, heavy metals, trash and floatables, adverse thermal effects and increased volumes of stormwater.

The Department is proposing at N.J.A.C. 7:8-5.5(h) that applicants proposing development draining to a Category One water body or mapped tributaries upstream of the Category One water within the same HUC14 drainage area, maintain a special water resource protection area for the waterbody. The effect of the proposed rule is to establish a buffer to prevent new point source discharges of stormwater to the waterway in order to preserve the existing aesthetic and ecological values of the area. Designation of special water resource protection areas of existing and/or restored herbaceous and woody vegetation is proposed as the best available and most reliable method of addressing these concerns and conditions. The proposed special water resource protection area requirement is applicable to Category One Designated streams and their tributaries within their HUC 14 drainage that are shown as perennial or intermittent on either the USGS Quadrangle Maps or the County Soil Survey Maps. The USGS maps and the Soil Survey maps were selected because they are readily available and recognizable sources of information on locations of intermittent and perennial streams.

The USEPA and Natural Resources Conservation Service both encourage the preservation and restoration of riparian areas because these natural systems play a critical role in reducing nonpoint source pollution by intercepting surface runoff, subsurface flow, and certain groundwater flows. Protection of riparian areas involves avoiding and minimizing impacts on buffers that control nonpoint source pollution by maintaining the existing functions of these areas, such as vegetative composition and cover; flow characteristics of surface water and groundwater hydrology; geochemical characteristics of substrate; flooding; and animal and plant species composition (Azous, 1991; Hammer, 1992; Mitsch and Gosselink, 1986; Reinelt and Horner, 1990; Richter et al., 1991; Stockdale, 1991). Complete reference information for this subsection is contained at the end of the summary of this subsection. Other important functions of buffers include floodwater storage, erosion control, groundwater recharge, and maintenance of biological diversity. Preservation and restoration of buffers should allow for both nonpoint source control and other corollary benefits of these natural aquatic systems. Buffers also perform important functions such as providing a source of food, nesting material, habitat, and nursery areas for a variety of terrestrial and aquatic wildlife (Atcheson et al., 1979).

The water quality improvement role of vegetated buffers includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals (Washington State Department of Ecology, 1996). Two examples of nonpoint source pollution abatement functions performed by vegetated buffers are (1) acting as a sink for phosphorus and (2) converting nitrate to nitrogen gas through denitrification. Vegetated buffers prevent or minimize nonpoint source pollutants entering waters of the State. Vegetated buffers have been shown to have useful functions for removing other nonpoint source pollutants, including total suspended solids (TSS), sulfates, calcium, magnesium, and sediments. Research also shows that vegetated buffers function to control the release of herbicides into surface waters. Thus, riparian vegetation buffers receiving waters from the effects of pollutants and they prevent the entry of pollutants into receiving waters. (USEPA, 2001)

The pollutant removal functions associated with riparian area vegetation and soils combine the physical process of filtering and the biological processes of nutrient uptake and denitrification (Lawrence et al., 1983;Peterjohn and Correll,1984). Riparian forests, for example, have been found to contribute to the quality of aquatic habitat by providing cover, bank stability, and a source of organic carbon for microbial processes like denitrification (James et al., 1990;Pinay and Decamps, 1988). Riparian systems have been shown to stabilize the recharge of shallow aquifers in a manner that supports streamflows of longer natural duration (Platts and Jenson, 1990). Riparian forests have also been found to be effective at reducing in-stream pollution during flood flows (Karr and Gorman, 1975; Kleiss et al., 1989

Although vegetated buffers reduce nonpoint source pollution, they do so within a range of operational conditions and cannot be viewed as a treatment mechanism for unlimited amounts of nonpoint source pollution. When hydrologic changes or nonpoint source pollutants exceed the natural assimilative capacity of riparian areas, these systems become stressed and can be degraded or destroyed (Bedford and Preston, 1988;Richardson and Davis, 1987;Richardson,1988). Therefore, vegetated buffers must be protected to the maximum extent possible from changes that would degrade their existing pollution abatement functions. This protection can be accomplished by applying nonpoint source management measures appropriate to the source of pollutants (e.g., activities associated with agriculture, urban development, forestry, hydromodification, and marinas and recreational boating). Finally, degraded vegetated buffers should be restored, where possible, to serve a nonpoint source pollution abatement function. It is important to consider that degradation of vegetated buffers not only inhibits their ability to treat nonpoint source pollution, but degraded areas adjacent to the water body can also become sources of nonpoint source pollution.

The use of special water resource protection areas to protect waters of the State is already in practice in New Jersey. The Flood Hazard Area Control Act rules require a near stream vegetation buffer of up to 50 feet for waterways classified as Category One, FW-1 trout-associated, or FW-2 trout-associated. The Freshwater Wetlands Protection Act requires that a buffer or transition area of up to 150 feet in width be established adjacent to all wetlands adjoining FW1/ FW2-TP

waterways and their tributaries. For all other wetlands, including wetlands regulated under the Coastal Wetlands Act of 1970, a wetlands buffer of up to 300 feet may be required. The Pinelands Commission reviews a 300-foot buffer to all waters in the Pinelands area and the Delaware and Raritan Canal Commission requires a 100-foot buffer to the 100-year flood plain for streams flowing into the Delaware and Raritan Canal.

Technical and scientific literature indicates riparian buffers ranging anywhere from 25 feet to several thousand feet are appropriate depending on what is intended to be protected by the buffer. Most of the older literature indicates that TSS removal, which is the common measure of water quality treatment, can be accomplished with buffers in the 50 to 150 foot ranges. However more recent studies indicate that buffers can become saturated by pollutants, thereby decreasing their pollutant removal efficiency. (Klapproth et al., 2000; EPA, 2001) Accordingly, the buffers need to be larger to assure that they are adequately protecting the Category One waters.

In determining a width for a special water resource protection area BMP to protect Category One Waters, the pollutant removal efficiency along with the overall protection of the ecosystem and its functions, such as floodwater storage, erosion control, groundwater recharge, and the maintenance of biological diversity was considered. The Department has determined that a 300 foot special water resource protection area is appropriate because it would provide a reasonable factor of safety for pollutant removal in light of the latest studies and provides a significant reduction in nonpoint source pollution reaching Category One waters. Having considered the various buffer ranges supported by the literature, the reduced pollutant removal by saturated buffers, and the goal of protecting Category One waters from the impacts of nonpoint source pollution, the Department is proposing a 300-foot special water resource protection area in Category One watersheds at the HUC 14 level. Within the 300' special water resource protection area, the Department recognizes that site conditions such as already disturbed areas or the ability to prevent erosion may necessitate some flexibility provided that the function and overall condition of the special water resource protection area is protected.

To protect Category One waters, proposed N.J.A.C. 7:8-5.5(h)1i requires a 300-foot special water resource protection area of existing vegetation or vegetation reestablished through natural succession be maintained and that no stormwater piping or structures be constructed within it.

Proposed N.J.A.C. 7:8-5.5(h)1ii, provides for some flexibility by allowing encroachment within the 300 foot special water resource protection area where development or disturbance has occurred. The encroachment will only be allowed if the applicant can demonstrate that impacts to the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In addition, the special water resource protection area cannot be reduced to less than 150 feet. Like the previous option, no stormwater structures may be constructed within the existing vegetation (except as provided by the flexibility in proposed N.J.A.C. 7:8-5.5(h)3) and no new stormwater outfalls will be permitted to discharge directly into the stream. Existing agricultural fields and their routine crop rotation practices that lie within the special water resource protection area are not intended to be covered by this provision.

Proposed N.J.A.C. 7:8-5.5(h)2 provides that development outside of the special water resource protection area that traditionally would have been piped through this area to the waterbody would now have to be designed to minimize and disperse stormwater in such a manner that any stormwater is discharged at a non-erosive velocity (e.g. complying with the Standards for Soil Erosion and Sediment Control in New Jersey) outside the special water resource protection area and not piped through the special water resource protection area.

Proposed N.J.A.C. 7:8-5.5(h)3 provides flexibility where stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard for Off-Site Stability in the “Standards for Soil Erosion and Sediment Control in New Jersey,” then stabilization measures in accordance with the above standards may be placed within the special water resource protection area. The flexibility provided within the special water resource protection area stablization measures is limited in that this flexibility will not allow stabilization measures within 150 feet of the Category One waterway. This provision recognizes that certain

projects have existing site-specific conditions, such as a combination of slopes and soils, where the discharge would cause erosion within the special water resource protection area, even if the flow is stable at the limit of the special water resource protection area. To identify the need for stabilization measures within the special water resource protection area the applicant must have a conceptual project design meeting with the appropriate Soil Conservation District and the Department to identify necessary stabilization measures. To compensate for the loss of special water resource protection area function where encroachment occurs for the purpose of stabilization, discharges covered by this provision shall reduce the post-construction TSS by 95% and shall address temperature impacts prior to discharge to the Category One waterway. This subsection allows the applicant and the Soil Conservation District, in conjunction with the Department, the flexibility to install necessary measures to ensure a stable conveyance when site-specific conditions are too restrictive while limiting the potential impact to the Category One water by not allowing the stabilization measure to be installed beyond 150 feet of Category One water.

At proposed N.J.A.C. 7:8-5.5(h)4, flexibility has been added by providing for the development of a Stream Corridor Protection Plan. If approved and adopted by the Department as an element of a Regional Stormwater Management Plan then the provisions of the Stream Corridor Protection plan shall be the applicable special water resource protection area requirements for that waterway. A Stream Corridor Protection Plan for a waterway subject to special water resource protection area requirements at proposed N.J.A.C. 7:8-5.5(h) shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined above in (h)1i. In no case shall a Stream Corridor Protection Plan allow reduction of the Special Water Resource Protection Area to be less than 150 feet as measured perpendicular to the waterway.

In order to allow individual citizens to build a single family home where local approvals have been granted prior to the proposed new rule becoming effective, proposed N.J.A.C. 7:8-5.5(h)5 provides an exemption for the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before

adoption date of this rule and provided that the construction begins on or before five years from the adoption date of the rule.

The Department invites comment and suggestions on implementation guidance for special water resource protection measures.

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N.J.A.C. 7:8-5.6 Calculation of stormwater runoff

Proposed N.J.A.C. 7:8-5.6 specifies how stormwater runoff is to be calculated under this chapter. Stormwater runoff calculations under this section are utilized in the stormwater quality, quantity and erosion control analyses. The USDA Natural Resources Conservation (NRCS) methodology, the Rational Method for peak flow and the Modified Rational Method for hydrograph computations are generally recognized methods to analyze the amount runoff from a site. The requirements in proposed N.J.A.C. 7:8-5.6(a)1 are generally consistent with runoff estimation techniques specified in the Residential Site Improvement Standards at N.J.A.C. 5:21-7.2(a), 7.2(b), and 7.2(c).

The RSIS at N.J.A.C. 5:21-7.2(a) indicate that the design engineer "should" make certain assumptions about the pre-construction condition if the design engineer is not able to verify that a given condition has existed for at least five years. The Flood Hazard Control Rules at N.J.A.C. 7:13-2.8(a)3 indicate that the pre-developed condition for agricultural lands will be woods unless it is demonstrated to be in uninterrupted agricultural use for ten years prior to the time of computation. Proposed N.J.A.C. 7:8-5.6(a)2 combines N.J.A.C. 7:13-2.8(a)3 and N.J.A.C. 5:21-7.2(a) and expands the pre-construction assumption to all existing conditions. The proposed rule clarifies that the existing condition is presumed to be wooded land use with good hydrologic condition, unless the design engineer verifies that another hydrologic condition has existed for at least five years without interruption prior to the time of calculation. The selection of the five-year time period is similar to and based on the Residential Site Improvement Standards requirement at N.J.A.C. 5:21-7.2(a). Digital photography available as a GIS layer from the Department may assist with this analysis.

In addition, whereas N.J.A.C. 5:21-7.2(a) and existing N.J.A.C. 7:7E-8.7(c)3iii and 7:13-2.8(a)3 require the design engineer to consider or account for all "significant land features" that increase ponding factors, proposed N.J.A.C. 7:8-5.6(a)3 requires the design engineer to account for all "significant land features and structures" that may reduce pre-construction stormwater runoff rates and volumes, and cites wetlands, culverts, and other enumerated features as examples of such features or structures. Structures provide hydrologic and hydraulic controls that greatly impact the

runoff rates and volumes, and the application of the existing stormwater requirements currently include the analysis of existing structures. Therefore, the proposed rule codifies existing practice and clarifies the intended scope of the analysis.

Proposed N.J.A.C. 7:8-5.6(a)4 requires the design engineer to consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces. Proposed N.J.A.C. 7:8-5.6(a)4 has no counterpart in existing N.J.A.C. 7:8-3.4(a)1, 7:7E-8.7(c)3iii, and 7:13-2.8(a)3. The sum of the contribution of stormwater runoff and volumes from the pervious and impervious areas taken separately is greater than the contribution of the entire area assuming a new land use between the pervious and impervious areas, especially for smaller storm events. This is the more accurate method of computing the total runoff from a site where the impervious areas are connected by storm drains and gutters. In addition, proposed N.J.A.C. 7:8-5.6(a)4 allows that urban impervious modifications as described in NRCS Technical Release-55, Urban Hydrology for Small Watersheds may be employed for the water quality design storm calculation. These modifications can provide volumetric credit to reductions in impervious surfaces and disconnection of the flow of runoff over impervious surfaces, specified in proposed N.J.A.C.7:8-5.3 as a nonstructural stormwater management strategy.

The provisions in existing N.J.A.C. 7:8-3.4(a)3 concerning the effective storage supplied by detention basins in flood plains are replaced by proposed N.J.A.C. 7:8-5.6(a)5, because the effective storage supplied by a stormwater management basin in a flood plain is better estimated by site-specific hydrologic and hydraulic analysis of the relation of that basin to that flood plain than by the method and table contained in the current provisions. Proposed N.J.A.C. 7:8-5.6(a)5 requires that if the invert of the outlet structure of a stormwater management measure is below the flood hazard design elevation as defined at N.J.A.C. 7:13, the design engineer must take into account the effects of tailwater in the design of structural stormwater management measures, particularly those in the flood hazard area. Tailwater is the elevation of water below the outlet pipe of the basin. The volume and the peak outflow from the basin are impacted by the changing elevation of the tailwater, since the difference in water surface elevations at the intake to the

stormwater outlet structure and the discharge point controls the outflows. Under this provision, the design engineer must consider the effects of flooding on the functioning of the basin, if portions of the basin are below the flood hazard area design elevation.

N.J.A.C. 7:8-5.7 Standards for structural stormwater management measures

Proposed N.J.A.C. 7:8-5.7 sets forth general standards for structural stormwater management measures in new major developments.

Proposed N.J.A.C. 7:8-5.7(a)1 provides that structural stormwater management measures shall be designed to take into account existing site conditions including, for example, wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and solution-prone carbonate rocks (limestone). Specific requirements in the design of structural stormwater management measures need the information on site-specific conditions to determine if the measure is applicable to the site. For example, infiltration basins require specific information including, but not limited to, infiltration rates related to the soil type, minimum depths to seasonal water tables, and permeability to demonstrate that the basin meets the design standards in the NJ BMP Manual. Existing site conditions can also be important in determining the dimensions or other specific design features of stormwater management measures. Not all types of stormwater measures are appropriate for each site; the Department encourages the selection and implementation of the stormwater management measures that best achieve the requirements of this chapter on a site-specific basis. Stormwater management plans may establish more specific requirements concerning how existing site conditions are to be taken into account.

Proposed N.J.A.C. 7:8-5.7(a)2 provides that structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs and ensure proper functioning. The structural stormwater management measure will only provide the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity protection if it continues to

function as designed. In order to perform proper maintenance, access areas for maintenance personnel and other factors to facilitate maintenance must be included in the proper design of a structural stormwater management measure. Stormwater management plans may establish more specific requirements concerning this aspect of design. Proposed N.J.A.C. 7:8-5.7(a)2 provides that trash racks shall be installed at the intake to the outlet structures and shall have parallel bars with one-inch spacing between the bars to the elevation of the water quality design storm. Additional trash rack requirements for safety are provided in proposed N.J.A.C. 7:8-6.2. The intake to the outlet structure outlet within a basin below the water quality storm is typically clogged with debris. The provision of a trash rack with parallel bars will keep the trash and debris away from the outlet structure, prevent clogging of the outlet structure, and facilitate maintenance. Trash racks should be hinged and be constructed primarily of sloping bars aligned in the direction of flow. Proposed N.J.A.C. 7:8-5.7(a)2 provides that for elevations greater than the water quality design storm, the parallel bars shall be spaced no greater than one-third of the width of the outlet. This requirement is based on the *NJDEP Ocean County Demonstration Study Stormwater Management Facilities Maintenance Manual*, June, 1989 (NJDEP Stormwater Management Facilities Maintenance Manual).

Proposed N.J.A.C. 7:8-5.7(a)3 provides that such measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. The use of strong, durable, and corrosion resistant material will reduce the need for maintenance and repairs and is related to proposed N.J.A.C. 7:8-5.7(a)2. The Department is in agreement with the Stormwater Detention Facility Advisory Council that the use of rigid, durable and corrosion resistant material can "prevent contractors from using materials such as wire mesh for their trash racks or grates." Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 will be deemed to meet this requirement.

Proposed N.J.A.C. 7:8-5.7(a)4 provides that the minimum orifice size at the intake to the outlet structure is two and one-half inches in diameter. This replaces the provision in existing N.J.A.C. 7:8-3.4(a)2 for a minimum outlet pipe of three inches. The reduction in size of the intake

would provide additional detention time, and assist in meeting the requirements for drawdown of stormwater volume from a basin in the BMP Manual. The provision under proposed N.J.A.C. 7:8-5.7(a)2 of a one-inch spacing on trash racks for the water quality design storm will protect the reduced size of the intake to the outlet from clogging.

Proposed N.J.A.C. 7:8-5.7(a)5 provides that stormwater management basins shall be designed to meet the minimum safety standards in proposed N.J.A.C. 7:8-6.

Proposed N.J.A.C. 7:8-5.7(c) provides that stormwater management measures guidelines are available in the NJ BMP Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and, water quality design and performance standards established by this subchapter. Presumed removal rates for certain BMPs are listed in proposed N.J.A.C. 7:8-5.5(b) Table 2 provided that the BMPs are designed in accordance with the NJ BMP Manual. The design engineer is provided the flexibility to use designs of stormwater management measures other than those in the NJ BMP Manual in support of N.J.A.C. 7:8-5.5(b) Table 2 provided that the measure has been documented to meet the appropriate performance standards.

Proposed N.J.A.C 7:8-5.7(d) provides that manufactured treatment devices may be used to meet the requirements of this subchapter, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology (NJCAT) and certified by the Department. Manufactured treatment devices are commercially developed devices for water quality treatment of stormwater runoff. These devices can be designed for a variety of pollutants, such as TSS, nutrients, and metals. The Department in cooperation with NJCAT is in the process of verifying and certifying the claims of manufactured treatment devices with respect to pollutant removal rates. Additional information regarding manufactured treatment devices is available in the NJ BMP Manual.

N.J.A.C. 7:8-5.8 Maintenance requirements

Proposed N.J.A.C. 7:8-5.8 sets forth maintenance requirements for stormwater management measures in major developments and replaces maintenance requirements in existing N.J.A.C. 7:8-3.4(a)5, 7:7E-8.7(f), and 7:13-2.8(e).

Proposed N.J.A.C. 7:8-5.8(a) requires a maintenance plan to ensure that the stormwater management measures fulfill their intended groundwater recharge, stormwater runoff quality and quantity control functions; to prevent or minimize any threat to public health or safety; and to minimize long-term maintenance costs.

Proposed N.J.A.C. 7:8-5.8(b) requires maintenance plans to contain cost estimates and specific preventative maintenance tasks and schedules. The maintenance plan must also identify the person(s) responsible for preventive and corrective maintenance. If the maintenance plan identifies a person other than the developer as having responsibility for the maintenance, the plan shall include documentation of the person's agreement to assume this responsibility or the developer's obligation to dedicate the stormwater management facility to such person under an applicable ordinance or regulation. In some cases, a person is listed for the maintenance responsibility of a stormwater management facility without being aware of their charge and the tasks associated with maintaining the facility. The documentation of the person's agreement or obligation to be the responsible party is intended to notify the responsible party of the tasks that they will be assuming as part of the maintenance for the stormwater management facility.

Proposed N.J.A.C. 7:8-5.8(c) provides that the maintenance responsibility shall not be assigned or transferred to owners or tenants of an individual property owner unless they are responsible for the entire residential development or project. As noted in the NJDEP Stormwater Management Facilities Maintenance Manual, "it is unlikely that an individual homeowner will have the capability or resources to properly maintain a Stormwater Management Facility."

Proposed N.J.A.C. 7:8-5.8(d) provides that if the responsible party is not a public agency, the maintenance plan shall be recorded upon the deed of record. This provision is intended to put a future owner on notice of the maintenance requirements associated with the property containing the stormwater management facility.

Proposed N.J.A.C. 7:8-5.8(e) requires corrective maintenance to be performed as needed and identifies several examples of such maintenance. Proposed N.J.A.C. 7:8-5.8(f) requires that the person responsible for maintenance maintain a log of the maintenance activities. Proposed N.J.A.C. 7:8-5.8(g) provides that the person responsible for maintenance evaluate the effectiveness of the maintenance plan at least once per year and adjust the maintenance plan as needed. Proposed N.J.A.C. 7:8-5.8(h) provides that the person responsible for maintenance shall make the maintenance records available at the request of a public entity. In total, proposed N.J.A.C. 7:8-5.8(e)-(h) require that the person responsible for maintenance continue to perform and evaluate the maintenance tasks on an ongoing basis to ensure the proper functioning of the stormwater management measure. This section also provides public agencies the opportunity to review the maintenance records to ensure continuous compliance with these requirements.

Proposed N.J.A.C. 7:8-5.8(i) provides that nothing in this section shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53. This statement indicates that maintenance provisions in this section does not supersede the authority of the municipality from requiring performance or maintenance guarantee.

The need for a maintenance plan, and implementation of that plan, cannot be overemphasized since the lack of maintenance is one of the major reasons for the failure of structural BMP’s to provide the level of treatment for which they were designed. Basic maintenance procedures are contained in the NJ BMP Manual. Unique or innovative maintenance procedures for those measures that are not specified in the NJ BMP Manual may be used subject to approval by the review agency.

N.J.A.C. 7:8-5.9 Sources for technical guidance

Proposed N.J.A.C. 7:8-5.9 identifies sources for technical guidance for stormwater management measures. One of the sources of information identified at N.J.A.C. 7:8-5.9(a) is the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual), {insert date}. The New Jersey Departments of Environmental Protection, Agriculture, Community Affairs, and Transportation, and other agencies were involved in the development of this interagency manual for stormwater management. The NJ BMP manual updates the standards in the Stormwater Runoff Treatment Standards (SRTS), that are part of the "Standards for Soil Erosion and Sediment Control in New Jersey." Wherever the SRTS and the NJ BMP Manual provide different technical information for a particular stormwater management measure, the NJ BMP Manual rather than the SRTS should be used for technical guidance in order to meet the requirements of this chapter. The Department believes that development of this interagency manual is the most efficient method of establishing consistency across State agencies in regard to stormwater runoff control technologies by creating one guidance document to address stormwater runoff quality, groundwater recharge, and stormwater runoff quantity design issues.

The Department recognizes that stormwater runoff control is an evolving technology. The Department considers the NJ BMP Manual to be a description of the current state of the art for stormwater management measures that may be practicable and appropriate, depending on site conditions and the nature of the development. However, use of other, more sophisticated structural stormwater management measures may be warranted in special circumstances, such as at certain industrial facilities. Resources utilized in the development of the manual include, but are not limited to, The Center for Watershed Protection, the Metropolitan Washington Council of Governments, the Watershed Management Institute, US EPA, as well as stormwater management programs established by other states and in Canada and Australia. A full listing of resources are available in the NJ BMP Manual. Information collected from these sources were refined by representatives from builders, municipal engineers, county engineers, Soil Conservation Districts,

the State Soil Conservation Committee, and the Natural Resources Conservation Service, as well as the Department, the New Jersey Department of Transportation, the New Jersey Department of Agriculture, and the New Jersey Department of Community Affairs.

Other sources of information provided under N.J.A.C. 7:8-5.9(b) are the Standards for Soil Erosion and Sediment Control in New Jersey, The Rutgers Cooperative Extension Service, and the Soil Conservation Districts.

Subchapter 6. Safety Standards for Stormwater Management Basins

General

Subchapter 6 is an entirely new subchapter that contains requirements established pursuant to N.J.S.A. 40:55D-95.1 which addresses the protection of public safety with respect to stormwater detention facilities, and the usefulness of trash racks and other specified design features. At the same time, the Legislature also created the Stormwater Detention Facility Advisory Council (Council) comprised of members appointed by the Governor, and directed the Council to perform the following duties:

1. Advise the Department concerning matters generally relating to stormwater detention facilities, but especially with regard to public safety considerations;

2. Advise the Department with regard to the Department's responsibilities pursuant to N.J.S.A. 40:55D-95.1;

3. Review, prior to their promulgation, any regulations, guidelines, or recommendations to be issued by the Department pursuant to N.J.S.A. 40:55D-95.1, and submit any comments or recommendations in connection therewith to the Department; and

4. Review any other matter submitted to it by the Department or the Governor, and state its position thereupon within the time limits set by the Department or the Governor.

Similarly N.J.S.A. 40:55D-95 requires that stormwater management plans and ordinances be designed to minimize public safety hazards at any stormwater detention facilities constructed as part of a subdivision or pursuant to a site plan. N.J.S.A. 40:55D-97 prohibits county approval of any municipal stormwater management plan or ordinance that is contrary to public safety regulations adopted by the Department. N.J.S.A. 40:55D-38 requires that subdivision and site plan ordinances ensure conformity with the public safety regulations adopted by the Department and reflected in stormwater management plans and ordinances.

Members of the Council were appointed in 1992 and in August 1994, the Council issued a report entitled, "Recommendations for Public Safety Regulations." The provisions in this rule proposal for stormwater management basin safety are consistent with that report. The Department and the Council believe that in accordance with the Legislature's direction in N.J.S.A. 40:55D-95.1, these provisions reduce public safety hazards at stormwater management basins to the maximum extent feasible. The Council's report may be obtained by calling the Bureau of Nonpoint Pollution Control at (609) 633-7021, or by writing the following address:

Bureau of Nonpoint Pollution Control
Division of Water Quality
New Jersey Department of Environmental Protection
PO Box 029
Trenton, NJ 08625-0029

The information in the report entitled "Recommendations for Public Safety Regulations" from the Stormwater Detention Facility Advisory Council are incorporated into proposed N.J.A.C. 7:8-6 as follows. Proposed N.J.A.C. 7:8-6.1(a) indicates that subchapter 6 provides requirements to

protect public safety as part of the design of new stormwater management basins. Proposed N.J.A.C. 7:8-6.1(b) provides that this subchapter is not intended to supersede municipal or county requirements for safety, and that municipalities and counties may also require the retrofit of stormwater management basins. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that local officials should have the flexibility to adopt additional requirements, in addition to those required by this subchapter.

Proposed N.J.A.C. 7:8-6.2 provides requirements for trash racks, overflow grates, and escape provisions. Proposed N.J.A.C. 7:8-6.2(a) provides the purpose of a trash rack, and requires that trash racks shall have parallel bars with no greater than six-inch spacing between the bars. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that trash racks "can be effective in preventing children and other persons from entering the outlet structure and pipes, when basins are dry, and being pulled into the outlet structures and pipes when they are flowing with water." Additional requirements for trash racks are listed under proposed N.J.A.C. 7:8-5.7(a)2.

Proposed N.J.A.C. 7:8-6.2(a)2 provides that trash racks shall be designed to maintain the hydraulic performance of the outlet pipe or structure. The typical design of the basin and the outlet structure do not incorporate the trash rack as a hydraulic control device. Therefore, the trash rack must not impede the hydraulic design performance of the outlet structure.

Proposed N.J.A.C. 7:8-6.2(a)3 provides that the average velocity through a clean trash rack is not to exceed 2.5 feet per second based on the net area of opening through the rack. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that maximum flow velocities through trash racks should to allow "children and other persons to escape from being pulled towards the outlet structure."

Proposed N.J.A.C. 7:8-6.2(a)4 provides that trash racks shall be constructed of rigid, durable, and corrosion resistant material and designed to withstand a perpendicular live loading of

300 lbs./ft.sq. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that "trash racks be constructed to be rigid, durable and corrosion resistant, to prevent contractors from using material such as wire mesh for their trash racks or grates. Perpendicular loading requirements were also established so that trash racks and grates could withstand loading from persons walking on the structure, floating objects, or other sources."

Proposed N.J.A.C. 7:8-6.2(b) provides that overflow grates shall be designed to prevent obstruction of the overflow structure and shall be secured to the outlet structure but be removable (N.J.A.C. 7:8-6.2(b)1), be no greater than two inches across the smallest dimension (N.J.A.C. 7:8-6.2(b)2), and constructed of rigid, durable, and corrosion resistant material and withstand a perpendicular live load of 300 pounds per square foot.

The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that overflow grates "can be effective in preventing children and other persons from entering the outlet structure and pipes, when basins are dry, and being pulled into the outlet structures and pipes when they are flowing with water; " that the use of rigid, durable and corrosion resistant material can "prevent contractors from using materials such as wire mesh for their trash racks or grates;" and that perpendicular loading requirements provide for the "persons walking on the structure, floating objects, or other sources."

Proposed N.J.A.C. 7:8-6.2(c) contains escape provisions from stormwater management basins. N.J.A.C.6.2(c)1 provides that if the basin has an outlet structure, escape provisions shall be incorporated into the outlet structure. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that "this would enable children to either climb out of the structure or, if required, out of the water and onto the structure." Escape provisions include the installation of permanent ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Safety ledges provided under proposed N.J.A.C. 7:8-6.2(c)2 also provide for escape provisions for children and other persons, as does the requirement for 3:1 maximum interior slope under proposed N.J.A.C. 7:8-6.2(c)3.

The requirements for stormwater management basin safety in Subchapter 6 (the requirements in N.J.A.C. 7:8-6.3 for trash racks, overflow grates, and escape provisions) are essentially identical to requirements already in effect under N.J.A.C. 5:21-7.5(f)6 for site improvements subject to the Residential Site Improvement Standards, N.J.A.C. 5:21.

Proposed N.J.A.C. 7:8-6.4(a) provides for variance or exemption for safety standards upon a written finding by the appropriate reviewing agency that the variance or exemption will not constitute a threat to public safety. The Department agrees with the recommendation of the Stormwater Detention Facility Advisory Council that variances and exemptions "may be warranted in some circumstances (for example, where detention basins are in locations inaccessible to the general public)" or where the requirements create a hardship and the variance or exemption does not constitute a threat to public safety.

Proposed N.J.A.C. 7:8-6 Appendix A provides an illustration of the safety ledge requirement under proposed N.J.A.C. 7:8-6.3(c)2.

Freshwater Wetlands Protection Act Rules

Subchapters 4 and 5 of the Freshwater Wetlands Protection Act Rules establish provisions for general permits and identify the types of general permits that can be issued. In order to coordinate the management of stormwater for activities addressed by these rules and the new Stormwater Management rules at N.J.A.C. 7:8, the Department is proposing to amend N.J.A.C. 7:7A-4.3 (b) 10 and N.J.A.C. 7:7A-5.11(f).

SUBCHAPTER 4 -GENERAL PROVISIONS FOR GENERAL PERMITS

N.J.A.C. 7:7A-4.3 Conditions that apply to all General Permit Authorizations

Subchapter 4 of the Freshwater Wetlands rules describes the conditions and procedures for the adoption of a general permit. N.J.A.C. 7:7A-4.3 (b) specifies the conditions that apply to all

activities conducted under the authority of a general permit. N.J.A.C. 7:7A-4.3 (b) 10 currently requires that stormwater generated from activities which would result in an increase of impervious surface of 1/4 acre or more satisfy the requirements in the Department's Flood Hazard Areas Control Act rules at N.J.A.C. 7:13-2.8. In order to establish uniform stormwater management requirements, the Department is proposing to amend this subchapter to refer to the new Stormwater Management rules to be established as part of this proposal. The current threshold of increases in impervious surface by one-quarter acre or more has been retained in the proposed definition of major development. In addition, major development also includes disturbances of one or more acres.

SUBCHAPTER 5 GENERAL PERMITS

N.J.A.C. 7:7A-5.11 General permit 11 – Outfalls and intake structures

N.J.A.C. 7:7A-5.11 establishes Statewide General Permit 11 for construction of stormwater outfall structures and associated stormwater conveyance structures in freshwater wetlands and State open waters. In order to coordinate with and cross-reference the new Stormwater Management rules at N.J.A.C. 7:8, the Department is proposing to amend N.J.A.C. 7:7A-5.11(f). The current rules require that stormwater discharged from an outfall authorized under general permit 11 be treated in accordance with the water quality requirements in the Department's Flood Hazard Area Control Act rules at N.J.A.C. 7:13-2.8. This amendment will require stormwater discharged from an outfall that is authorized under this general permit to be managed in accordance with the requirements of the Stormwater Management Rules at N.J.A.C. 7:8.

Rules on Coastal Zone Management - N.J.A.C. 7:7E

N.J.A.C. 7:7E-8.7 Stormwater management

The Department is proposing to amend **N.J.A.C. 7:7E-8.7**, the Stormwater Management section of the Rules on Coastal Zone Management. In order to coordinate with and cross-reference the new Stormwater Management rules at **N.J.A.C. 7:8**, the Department is proposing to replace the

stormwater management provisions in existing **N.J.A.C. 7:7E-8.7(a) through (f)** with references to **N.J.A.C. 7:8** as summarized below, and to remove the Rationale at existing **N.J.A.C. 7:7E-8.7(g).**

Existing N.J.A.C. 7:7E-8.7 was adopted in 1994 as an interim measure. The Department said at that time that the stormwater management provisions in existing N.J.A.C. 7:7E-8.7 would be replaced by references to N.J.A.C. 7:8 at the time of adoption of changes to N.J.A.C. 7:8 (see Summary of Public Comments and Agency Responses, 26 N.J.R. 2991; July 18, 1994). In 1998, the Department proposed to amend existing N.J.A.C. 7:7E-8.7(d)1iii (3), which limits the use of vegetated swales. The summary of that proposed amendment noted that "the Department is preparing to propose substantial revisions to the Stormwater Management rules at N.J.A.C. 7:8, which, when adopted, will supersede this section of the Coastal Zone Management rules" (see 30 N.J.R. 4180-4181; December 7, 1998).

Flood Hazard Area Control Act Rules

N.J.A.C. 7:13-2.8 Stormwater management

The Department is proposing to amend N.J.A.C. 7:13-2.8, the Stormwater Management section of the Flood Hazard Area Control Act rules. In order to coordinate with and cross-reference the new Stormwater Management rules at N.J.A.C. 7:8, the Department is proposing to replace the stormwater management provisions in existing N.J.A.C. 7:13-2.8(a)1 through (a)4 and 2.8(b) through (e) with references to N.J.A.C. 7:8 as summarized below. See also the corresponding references in proposed N.J.A.C. 7:8-1.1(b) and 5.1(a)2 to the Flood Hazard Area Control Act and other statutes, and to implementing rules for those statutes (including N.J.A.C. 7:13). The Department adopted existing N.J.A.C. 7:13-2.8 in 1995 to provide the public with standards for design until such time as the appropriate changes to the Stormwater Management rules at N.J.A.C. 7:8 are adopted (see responses to Comments 131 and 160, 27 N.J.R. 1228, 1231; March 20, 1995).

Statewide Water Quality Management Planning Rules

General

The Department is proposing to amend N.J.A.C. 7:15-3.4 and 3.5, the sections of the Statewide Water Quality Management Planning rules that govern the amendment and revision of water quality management (WQM) plans. In order to coordinate with and cross-reference the new Stormwater Management rules at N.J.A.C. 7:8, the Department is proposing to amend N.J.A.C. 7:15-3.4 and 3.5 by adding provisions concerning regional stormwater management plans and references to N.J.A.C. 7:8. Proposed amendments are being made to N.J.A.C. 7:15-3.4 and 3.5 to acknowledge how to propose as a regional stormwater management plans and an amendment to a Water Quality Management Plan and how to provide for a revision to a regional stormwater management plan that is not considered an amendment.

In 1997, the Department released for comment draft rules regarding watershed stormwater management (see Notice of Opportunity for Public Comment on Draft Stormwater Management Rules, 29 N.J.R. 732(a); March 3, 1997). Under those draft rules, watershed stormwater management plans would be completed by local and regional agencies on a voluntary basis and adopted by the Department (the Governor's designee) as amendments to areawide WQM plans under N.J.A.C. 7:15. As noted earlier in this summary, the comments received on the draft rules were generally supportive of the watershed stormwater management planning strategy.

Dam Safety Standards

N.J.A.C. 7:20-1.3 Permit-by-rule

The Department is also proposing to amend N.J.A.C. 7:20-1.3, the permit-by-rule section of the Dam Safety Standards. In order to coordinate with and cross-reference the new Stormwater Management rules at N.J.A.C. 7:8, the Department is proposing to amend the requirements at

N.J.A.C. 7:20-1.3(a)1 for Class IV dams by clarifying that a Class IV dam constructed for stormwater management must also comply with the stormwater management rules at N.J.A.C. 7:8.

Social Impact

The rules proposed would have a positive effect upon those persons living in municipalities where a stormwater management plan and implementing ordinance are adopted. Flooding and pollutants from stormwater runoff associated with development may pose a threat to public health, safety and property. These rules are intended to: (1) reduce potential flooding and nonpoint source pollution problems; (2) encourage groundwater recharge; (3) protect the integrity of stream channels; (4) reduce soil erosion; and (5) ensure the adequacy of bridges and culverts. The standards proposed in this rule are intended to provide increased protection from flood damage, erosion and water quality degradation. By decreasing flooding and controlling pollutants associated with stormwater, these rules will decrease stormwater-related damage to public health, private property and the environment.

In addition, the new regional stormwater management planning criteria will enable stormwater runoff and nonpoint source pollution to be controlled in a way that focuses on particular issues within drainage areas. The administrative process proposed for the development of regional stormwater management plans enables sufficient public and local agency input into the development of solutions to regional issues. The technical process proposed allows drainage area - based controls for stormwater runoff to be developed and implemented with adequate knowledge and assessment of local conditions.

The proposed site specific stormwater management requirements for major development at N.J.A.C. 7:8-5 will encourage natural vegetation to remain on sites and the use of less structure measures. Encouraging less structural measures and trying to maintain natural site conditions as a goal is intended to provide, among other things, a more aesthetically pleasing method for the

control of runoff impacts. Maintaining groundwater recharge on development sites is intended to maintain base flows in streams necessary for healthy ecological conditions and aquifer recharge necessary to replenish water supplies and baseflow.

The proposed detention basin safety standards at N.J.A.C. 7:8-6 are intended to eliminate public safety hazards to the maximum extent feasible at this time, while allowing site-specific solutions to those hazards in keeping with the generally accepted stormwater management and engineering principles.

Environmental Impact

The new rules proposed will have a positive Environmental Impact. The rules proposed will provide greater protection from flooding, erosion and water quality degradation and loss of groundwater recharge from stormwater runoff associated with new major development than the current standards. Updated general design and performance standards will be implemented on a Statewide basis where regional stormwater management plans have not been adopted. The Statewide standards will enhance environmental protection by establishing a specific water quality performance standard of 80% reduction of total suspended solids and the control of nutrients to the greatest extent feasible. Erosion and flooding performance standards are proposed which provide protection for downstream areas being impacted by upstream development. Including special protection measures for the most sensitive and pristine waters designate Category One provides a mechanism to prevent impacts associated with stormwater runoff and nonpoint source pollution where it has been determined that it is most necessary. Conversely, providing a waiver for the groundwater recharge performances standard in urbanized areas encourages development in targeted locations thereby relieving development pressures on environmentally sensitive areas.

Enhanced guidance and incentives for the development of regional stormwater management plans enable the development of watershed specific objects and design standards that focus on specific problems in specific waterbodies. For example, beach closings have been attributed to

pollutants associated with stormwater runoff. Regional stormwater management plans can be developed to target pollutants and pollutant sources in the drainage areas of beaches to provide protection of this resource. Also, development and land use activities contribute greatly to types and amount of pollutants that are found in stormwater runoff. Regional stormwater management processes allow for and encourage the incorporation of preventive controls which can focus land disturbances in ways and in locations that minimize impacts as well as the need for large structural solutions to runoff control. In addition, the proposed rules, through the creation of regional stormwater management plans, allow for the identification of stormwater runoff issues caused by existing development and the development of cross jurisdictional solutions to these existing issues. In general, controlling pollution associated with stormwater on both the municipal and drainage area levels preserves the integrity of the environment and will lead to improvements in water quality providing a positive environmental impact to the citizens of New Jersey.

Economic Impact

The regional stormwater management plan component of the proposed rules will not have a mandatory economic impact as the development of regional stormwater management plans is voluntary. Those entities that choose to develop regional stormwater management plans may incur costs for consultants in professions such as engineering, planning, scientists and the law. To encourage regional stormwater management planning, the Department intends to provide financial and technical assistance in the development of regional stormwater management plans when finances are available and where appropriate. In addition, the Department has loans available for construction projects identified in regional stormwater management plans.

The economic impact of regional stormwater management plan development and implementation could be positive for municipalities, individuals, local businesses and developers. For individuals, the development of regional stormwater management plans could define appropriate stormwater controls that target known area problems that cause hardship such as flooding, erosion and/or water resource use impairment. Water resource use impairment can cause

negative financial impacts on local economies where tourism or resource uses supports job for example, shellfisheries and bathing beaches. The Department also believes that regional stormwater management plans provide an opportunity for cost effective nonstructural solutions to runoff control to be identified throughout a drainage basin where developers may benefit by cost savings.

The development of municipal stormwater management plans is not intended to require as detailed a technical analysis as regional stormwater management plans. Municipal stormwater management plans development may require professional service costs by municipalities such as attorneys, planners and engineers. Municipalities may make use of such local volunteer groups as municipal environmental commissions to complete some of the municipal stormwater management plan elements.

Compliance with the stormwater management requirements for major development implemented through Department permitting programs and approved stormwater management ordinances may result in somewhat higher costs for future development. Additional costs that may be incurred by the new performance standards in this rulemaking include costs associated with additional best management practices on developed sites, maintenance of those practices overtime, and the potential loss of units or the reduction in scope of a project. However, the end result is expected to be reduction in long term costs associated with flooding, water supply depletion and environmental damages. Compliance with the proposed special protection measures for Category One waters may generate an increased financial burden. This burden is offset by the protection of the State's most sensitive and pristine waters. In addition, preventive approaches stressed in this rulemaking for stormwater management are cost effective in the long term.

Federal Standards Analysis

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq. (as amended by P.L. 1995, c. 65) require State agencies which adopt, readopt, or amend State regulations that exceed any Federal

standards or requirements to include in the rulemaking document a Federal Standards Analysis. There are no current, analogous Federal requirements for stormwater management planning; however, there are several Federal programs concerning stormwater runoff and nonpoint source pollution control. These are discussed below.

Clean Water Act

The Federal Clean Water Act (33U.S.C. 1251 et seg.) requires permits under Section 402 of that Act for certain stormwater discharges. The Department's requirements to obtain such permits are set forth in the New Jersey Pollutant Discharge Elimination System Rules, N.J.A.C. 7:14A, rather than in these Stormwater Management rules being repealed and repromulgated.

Section 319 of the Clean Water Act authorizes a Federal grant-in-aid program to encourage states to control nonpoint sources. The Department developed a management program for nonpoint source control under which the Department issues grants to local, regional, State, and interstate agencies as well as to nonprofit organizations to, for example, develop or monitor best management practices to control stormwater.

Coastal Zone Management Act

Under Section 6217(g) of the Coastal Zone Management Act Reauthorization and Amendments of 1990 (CZARA), P.L. 101-508, the U.S. Environmental Protection Agency (EPA) has published "Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters" (CZARA 6217(g) Guidance). States may opt to participate or not participate in overall coastal zone management program, with no penalty for non-participation other than the loss of Federal grants for this program. No mandatory Federal standards or requirements for nonpoint sources pollution control are imposed. The CZARA 6217(g) Guidance includes management measures for stormwater runoff and nonpoint source pollution control from land development as well as many other source types. The Department has developed a coastal zone management program, including a component addressing coastal nonpoint pollution control. The Stormwater

Management rules at N.J.A.C. 7:8 are one means by which the Department implements its nonpoint pollution control program.

The Department has determined that the rules proposed for readoption do not contain any standards or requirements that exceed the standards or requirements imposed by Federal law. Accordingly, Executive Order 27(1994) and N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c. 65) do not require any further analysis.

Jobs Impact

The Department does not anticipate that the repeal and proposed new Stormwater Management Rules will not have a major impact on jobs. However, the development and implementation of watershed stormwater management plans has the potential for some increase in jobs in consulting and/or public planning. Municipalities that undertake municipal stormwater management planning under the revised rules are likely to use existing planning and engineering staff to oversee the planning process. While some municipalities may employ consultants to assist in municipal stormwater management planning, the Department does not expect that existing consulting firms will increase their workforce as a result of the modified statewide standards. Likewise, the adoption of these rules is not expected to increase or decrease the number of jobs in the construction industry.

Some increase in jobs in the consulting and/or public planning area for the development and implementation of regional stormwater management plans is possible. New planning and analysis activities would be necessary for the completion of watershed stormwater management plans. However, these plans are voluntary. The Department intends to support local watershed planning efforts with financial and technical assistance as possible and appropriate.

Regulatory Flexibility Analysis

In accordance with the New Jersey Regulatory Flexibility Act N.J.S.A. 52:14B-16 et seq., the Department has determined that this proposed repeal and repromulgation of N.J.A.C. 7:8 will not impose reporting, recordkeeping or other compliance requirements on small businesses; therefore, no regulatory flexibility analysis is required. The stormwater management rules only apply to municipalities preparing stormwater management plans and ordinances in accordance with the New Jersey Stormwater Management Act, PL 1981, c.32, which amends and supplements the Municipal Land Use Law N.J.S.A. 40:55D-1 et seq.

Agriculture Industry Impact

In accordance with PL 1998, c. 48, which amends to Right to Farm Act, and in accordance with N.J.S.A. 52:14B-4(a) 2, which requires that an Agriculture Industry Impact statement be included in rule proposals, the Department has evaluated this rulemaking to determine the nature and extent of the proposed new Stormwater Rules and amendment's impact on the agricultural industry. The Department anticipates that the water quantity management provisions in the rules will not have a significant impact on existing farming practices. In addition, the Department does not expect the water quality provisions in the rules to have an adverse impact on the agricultural industry because these concerns have been addressed in the "On-Farm Strategies to Protect Water Quality An Assessment and Planning Tool for Best Management Practices in New Jersey" prepared by the by New Jersey Association of Conservation Districts in Cooperation with the New Jersey Department of Agriculture State Soil Conservation Committee and the U.S. Department of Agriculture Natural Resources Conservation Service.

Smart Growth Impact

Executive Order No. 4 (2002) requires State agencies which adopt, amend or repeal any rule adopted pursuant to N.J.S.A. 52:14B-4(a) of the Administrative Procedure Act, to describe the impact of the proposed rule on the achievement of smart growth and implementation of the New Jersey State Development and Redevelopment Plan (State Plan). The Department has evaluated

this rulemaking to determine the nature and extent of the proposed rules' impact on smart growth and the implementation of the State Plan.

This rulemaking will encourage smart growth through the implementation of a number of State Development and Redevelopment Plan Statewide Policies including comprehensive planning, Resource Planning and Management Policies, Urban Revitalization, Water Resources, Open Lands and Natural Systems. This rulemaking accomplishes this by promoting regional planning processes for stormwater management that are coordinated beyond local jurisdictional boundaries. Local and regional stormwater planning elements in this rule prevent water pollution, integrate land use planning and natural resource information, coordinate water quality and land use programs, protect ground water sources, establish and maintain special water resource protection areas, and convey stormwater naturally. The rule making strongly encourages use of better site design techniques that minimize impacts to the environment through nonstructural stormwater management strategies.

The rule making reflects the differences in stormwater recharge considerations in already developed urban areas. The rule making does not increase obstacles for urban redeveloped by specifically eliminating the need to meet the new groundwater recharge performance standard in urban redevelopment areas and by encouraging revitalization through mitigation and restoration. The rule making further advances the Governor's Smart Growth policies by providing clear technical standards and guidance to the regulated public. This promotes more predictable, certain and expeditious review and approval processes. Elimination of uncertainty in the review process is an important factor in attracting business necessary for appropriate development and redevelopment of urban areas.

The Surface Water Quality Standards, N.J.A.C. 7:9B, establish criteria for classifying certain waterways as Category One Waters, which, because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s) are in need of special protection from measurable changes in water quality characteristics. This rule making

provides additional protection through special water resource protection areas for waters designated Category One. This policy in combination with minimizing obstacles for urban redevelopment implements the principles of smart growth by focusing new growth into redevelopment of our older urban areas, while protecting existing open space and conserving exceptional value natural resources.

Full text of the proposed repeal and repromulgation can be found below.

CHAPTER 7A

FRESHWATER WETLANDS PROTECTION ACT RULES

7:7A-4.3 Conditions that apply to all General Permit Authorizations

(a) (No change)

(b) The following conditions apply to all activities conducted under the authority of a general permit:

1. - 9. (No change.)

10. If activities under the general permit [will result in a 1/4 acres or greater increase in impervious surfaces] **meet the definition of "major development" at N.J.A.C. 7:8-1.2,** the [stormwater resulting from the general permit activities shall be treated in accordance with the water quality requirements in the Department's Flood Hazard Area Control Act rules at N.J.A.C. 7:13-2.8] **Stormwater Management Rules at N.J.A.C. 7:8 apply.**

11. – 15. (No change.)

7:7A-5.11 General permit 11- Outfalls and intake structures

(a) - (e) (No change.)

(f) Stormwater discharged from an outfall authorized under general permit 11 shall be [*treated]* **managed** in accordance with [*water quality* requirements in the Department's *Flood Hazard Area Control Act rules at N.J.A.C. 7:13-2.8*] **the Stormwater Management Rules at N.J.A.C. 7:8**.

CHAPTER 7E

COASTAL ZONE MANAGEMENT

SUBCHAPTER 8. RESOURCE RULES

7:7E-8.7 Stormwater management

[(a) Stormwater runoff is the flow of water on the surface of the ground, resulting from precipitation.

(b) Coastal development shall employ a site design which, to the extent feasible, minimizes the amount of impervious coverage on a project site. In addition, the development shall use the best available technology to minimize the amount of stormwater generated, minimize the rate and volume of off-site stormwater runoff, maintain existing on-site infiltration, simulate natural drainage systems and minimize the discharge of pollutants to ground or surface waters. Consistent with the provisions of the Stormwater Management rule, the overall goal of the post-construction stormwater management system design shall be the reduction from the predevelopment level of total suspended solids (TSS) and soluble contaminants in the stormwater.

1. Non-structural management practices, including, but not limited to, cluster land use development, minimum site disturbance, open space acquisition, use of sheet flow from streets and parking areas, and the protection of wetlands, steep slopes and vegetation shall be incorporated into project designs. These non-structural management practices shall be utilized, unless it is demonstrated that these practices are not feasible, from an engineering perspective, on a particular site.

2. In determining the appropriate stormwater management system design for a particular project, the existing physical site conditions must be carefully considered. Slopes, depth to seasonal high water table, soil type and texture, watershed area, and property areas are all critical to the selection of a suitable stormwater management technique or combination of techniques.

(c) Standards relevant to stormwater management system design are as follows:

1. All stormwater management systems shall be designed in accordance with this section, and shall be consistent with the Standards for Soil Erosion and Sediment Control in New Jersey (N.J.A.C. 2:90). The use of control techniques not specifically listed in this section will be evaluated on a case-by-case basis, and may be permitted in conjunction with the techniques discussed in this section. Alternative techniques may be acceptable, provided that it can be demonstrated that they satisfy the design standards of this section. Complete justification for selection of a particular stormwater management technique, including the engineering basis for exclusion of Department's preferred techniques, shall be provided as part of a complete permit application submission.

2. The following apply to development proposed in tidal areas:

i. The construction of stormwater outfalls into tidal waters may require the incorporation of a tide check or similar valve depending on the physical conditions of the site, including, but not limited to, land elevation, drainage area, bulkhead elevation, tidal elevation and 100-year flood elevation.

ii. Because tidal flooding is the result of higher than normal tides, the 100-year tidal flood elevation is not affected by development. Therefore, development activities that are located along or adjacent to tidal water bodies and segments of tidal water bodies, as specified below, are not required to comply with the flood control requirements of (c) 3

below. These affected tidal waters include:

(1) Atlantic Ocean;

(2) All water bodies named on the U.S. Geological Survey 7.5' topographic maps as "bays," "canals," "coves," "guts," "harbors," "inlets," "sounds," "thorofares," and "channels," except for the portion of the Delaware River near Camden called "Back Channel";

(3) All man-made lagoons and canals discharging into the water bodies listed in (c) 2ii(2) above;

(4) All sections of the "Intracoastal Waterway";

(5) Arthur Kill (entire reach); Hackensack River (Newark Bay to the Pulaski Skyway); Hudson River; Manasquan River (Atlantic Ocean to Route 70); Metedeconk River (Barnegat Bay to Route 70); Navesink River (Shrewsbury River to Coopers Bridge); Passaic River (Newark Bay to the Pulaski Skyway); Raritan River (Raritan Bay to the New Jersey Turnpike); Shark River (Atlantic Ocean to confluence with Laurel Gully Brook; Shrewsbury River (Sandy Hook Bay to Seven Bridge Road); Waretown Creek (Atlantic Ocean to Route 9); Whale Brook (Raritan Bay to Route 35); Wreck Pond (Atlantic Ocean to Route 71); and

(6) Along watercourses not specifically identified in (c) 2ii(1) through (5) above, that flow into tidal water bodies listed above, the reach between the mouth and either the first bridge or culvert upstream or the point upstream where the regulatory flood (as per N.J.A.C. 7:13) exceeds the 100-year tidal elevation, whichever is closest to the mouth.

3. The following apply to flood control design:

i. If a regional stormwater management plan has been developed for the watershed, the applicant shall meet the flood control requirement of the Stormwater Management rule by conforming to the regional management plan. If no regional stormwater management plan has been developed then the applicant shall design the stormwater system so that the post-development peak runoff rate for the two year storm event is 50 percent of the pre-development peak runoff rate and the post-development peak runoff rates for the 10- and 100-year storm events are 75 percent of the pre-development peak runoff rate.

ii. The design storms used to achieve the required level of site runoff control described in (c)3i above shall be defined as either the 24-hour storm using the rainfall distribution recommended by the U.S. Department of Agriculture Soil Conservation Service, or as the total rainfall uniformly distributed throughout the critical storm duration as determined by the Modified Rational Method (T.J. Mulvaney, 1851, On the Use of Self-registering Rain and Flood Gages in Making Observations of the Relations of Rainfall and Flood Discharges in a Given Catchment, Proc. Inst. Civil Engineering, Ireland, vol. 4, pp. 18-31). A 20-acre drainage area limit shall be used for the Modified Rational Method unless otherwise approved by the Department.

iii. For the purposes of computing runoff, all lands in the site shall be assumed, prior to development, to be in good hydrologic condition if the lands are pastures, lawns or parks, with good cover if the lands are woods, or with conservation treatment if the land is cultivated, regardless of conditions existing at the time of computation. For lands to be considered cultivated, they must have been used for such purposes without interruption for a period of at least 5 years prior to the time of computation. If such use has not occurred or cannot be satisfactorily documented, woods shall be assumed to be the predeveloped land condition. In computing pre-development runoff, all significant land features, such as ponds, depressions or hedgerows that increase the ponding factors shall be accounted for.

iv. Plans and calculations shall be provided to show that the discharge will not cause erosion along the flow path between the outfall and the receiving waterbody. All stormwater discharge paths shall be stabilized in accordance with the criteria in 2.90, Standards for Soil Erosion and Sediment Control in New Jersey.

4. The following apply to water quality control design:

i. The water quality control standard shall be the maximum feasible reduction of the total suspended solids (TSS) loading after construction has been completed, up to and including the water quality design storm. At a minimum, post-construction loadings of TSS shall match the predevelopment loadings of TSS for the water quality design storm.

(d) Stormwater management is vital to protecting and improving New Jersey's water quality and control techniques and information about their effectiveness in different situations is evolving. The Department has prepared the following hierarchy of the stormwater management techniques based on its experience to date. The goal of the hierarchy is to avoid the use of techniques that have not been successful in previous similar situations and to guide permit applicants toward techniques that are likely to be successful. At the same time, the Department is open to innovative proposals or additional information that may help better manage stormwater on a particular site or in a particular region. For each of the techniques identified in this rule, the Department has included conditions that shall be considered, but the Department recognizes that this is an evolving technology and will evaluate individual proposals on a case by case basis. The Land Use Regulation Program has assigned to the following stormwater management techniques a hierarchy of preferences for use in project design categorized as either "Conditionally Acceptable" or "Discouraged." If an applicant cannot make maximum use of "Conditionally Acceptable" stormwater management techniques, based on physical or engineering constraints, the Department encourages the use of a combination of

techniques. If use of a particular technique on a property can be designed to meet a majority of that technique's normal requirements, then an applicant may still be required to use that stormwater management technique, if use of that technique on that property remains environmentally preferable to alternative techniques. In addition, none of the techniques listed in this section may be constructed "on-stream" unless the stormwater management system is part of a Departmental-approved regional stormwater plan.

1. Conditionally Acceptable: The following list represents the stormwater management techniques which may be incorporated into project design, subject to the specified conditions. The six "Conditionally Acceptable" techniques in this section are not listed in any order of preference, and shall be equally evaluated on a case-by-case basis.

i. The use of newly constructed wetlands is conditionally acceptable, provided that the following conditions are satisfied:

(1) The water depth in the wetlands is less than one foot (six inches is optimal), with the exception of the 25 percent area discussed at (d) 1i(6) below;

(2) The perimeter of the water area shall be graded to form a 10 to 20-foot wide shallow bench for aquatic emergents, for at least half of the water area perimeter;

(3) The surface area of the wetland shall constitute about two to three percent of the total area of the contributing watershed;

(4) Wetland vegetation shall be commercial wetland plant stock (either live plants or dormant rhizomes), as opposed to transplants or seeding;

(5) At least two primary native or non-aggressive exotic wetlands species, which are hardy and rapid colonizers, shall be planted over about 30 percent of the total shallow

water area. Each primary species shall be planted in three or four monospecific stands, with individual plants about two to three feet apart. Up to three secondary wetland species, that are not as aggressive in colonizing a pond, shall be randomly distributed in clumps around the perimeter of the wetlands;

(6) If a basin is exclusively designed to act as a shallow wetland, at least 25 percent of the total surface area of the inundated area shall be reserved for open water areas that are two or more feet deep, to provide habitat for waterfowl and marsh birds;

(7) The use of native fish stocks in constructed wetlands is encouraged, as a means to control mosquitoes;

(8) The use of a clay liner in the system design may be required, depending on site conditions, in order to ensure adequate hydrology in the system; and

(9) The surface and drainage shall be sufficient so that the inflow of dry weather flow into the wetlands will be large enough to sustain sufficient water during dry periods and prevent stagnation.

ii. The use of wet ponds/retention basins is conditionally acceptable, provided that the following conditions are satisfied:

(1) The ratio of permanent pool or basin volume to the runoff volume for the water quality storm runoff shall be greater than three to one;

(2) The pool must be shallow enough to avoid thermal stratification, and deep enough to minimize algal blooms and resuspension of decomposing organics and other previously deposited materials;

(3) The pond shall be designed so that the inflow of dry weather flow either from the contributing drainage area or ground water base flow, into the wet pond will be large enough to sustain sufficient water during dry periods and prevent stagnation;

(4) Wet ponds shall be configured so as to promote maximum sedimentation;

(5) The use of native fish stocks in wet ponds is strongly encouraged, as a means to control mosquitoes; and

(6) The use of a clay liner in the system design may be required, depending on site conditions, to ensure adequate hydrology in the system.

iii. The use of detention basins is conditionally acceptable, provided that the following conditions are satisfied:

(1) The water quality design for detention will require prolonged detention of the water quality design storm which is a one-year frequency 24-hour storm using the rainfall distribution recommended for New Jersey by the U.S. Department of Agriculture, Soil Conservation Service, or a storm of 1.25 inches of rainfall in two hours. Provisions shall be made for the water quality design storm to be retained and released so as to evacuate 90 percent or less in 18 hours in the case of residential developments, and 36 hours in the case of other developments. This is usually accomplished by a small outlet orifice at the lowest level of detention storage, with a large outlet or outlets above the level sufficient to control the water quality design storm. The minimum allowable orifice diameter shall be three inches. If the above detention time requirement would result in a pipe smaller than three inches in diameter, then additional methods shall be employed to remove the TSS prior to discharge into the basin. The retention time shall be considered brim-drawdown time, and therefore begin at the time of peak storage;

(2) The bottom of the basin shall be at an elevation above the seasonal high water table. Where possible, at least three feet of vertical separation between the bottom of the basin and the seasonal high water table shall be provided to promote infiltration. If the seasonal high water table is one foot or less below the bottom of the basin, then the use of constructed wetlands or a wet pond shall be considered;

(3) Native and non-aggressive exotic vegetation for use in detention basins shall be the approved species as determined by the appropriate Soil Conservation District; and

(4) All low-flow channels shall be constructed of rip-rap, grass paver blocks or similar material that will allow for the growth of vegetation. The use of underdrains below the low flow channel will be allowed if necessary to dry out the soil to allow vehicular access for maintenance, such as tractors to cut the vegetation.

iv. The use of vegetated swales is conditionally acceptable, provided that the following conditions are satisfied:

(1) The bottom of the swale shall be above the elevation of the seasonal high water table;

(2) Swales shall be used in conjunction with other stormwater management techniques (detention basins, wet ponds, constructed wetlands, underground infiltration) as internal conveyances within a stormwater collection system, receiving only overland flow (that is, as replacements for curb and gutter flow or on highway medians);

(3) The use of vegetative swales shall be limited to low intensity developments, as defined in N.J.A.C. 7:7E-5, unless combined with other stormwater management techniques;

(4) Swales accepting concentrated discharges from pipes at the end of the stormwater

system will not be accepted for water quality treatment unless there are no other viable methods available to remove the TSS prior to discharge and the length of the swale is the maximum achievable in relation to the site conditions;

(5) The swales shall be designed to provide the maximum feasible vegetation contact time ranging from five to 20 minutes where feasible, for the water quality storm;

(6) The slope of the swale shall not be less than 0.5 percent nor greater than 5 percent;

(7) Vegetated swales shall only be used where the expected velocity of flow does not exceed 1.5 feet per second;

(8) The use of rip-rap, or other stabilization material that will allow vegetative growth, in conjunction with appropriate vegetation, may be incorporated into the design of the swale, if a stable condition using vegetation alone cannot be achieved;

(9) Vegetation for use in the swales shall include native species, of sufficient height to extend above the expected elevation of the water quality design storm in the swale and shall be coordinated with the local Soil Conservation District to determine the suitability for use on the site; and

(10) In addition to the standards in (d)2i(1) through (9) above, all swales must be designed in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey," N.J.A.C. 2:90.

v. The use of infiltration basins is conditionally acceptable, provided that the following conditions are satisfied:

(1) There shall be at least two feet of vertical separation between the bottom of the

proposed infiltration basin and the seasonal high water table;

(2) The soil texture shall be sand, loamy sand or sandy loam, as defined by the U.S. Department of Agriculture;

(3) No topsoil may be placed in the basin bottoms;

(4) The basin bottom shall be scarified after the basin is formed, after which no other construction within the basin may occur;

(5) All of the water quality storm shall be stored and recharged within 72 hours of the storm; and

(6) There is an adequate back-up drainage system provided, in the event that the infiltration capacity of the infiltration basin fails.

vi. The use of perforated pipe for the purpose of underground recharge of stormwater is conditionally acceptable, provided the following conditions are satisfied:

(1) The soil texture shall be sand, loamy sand or sandy loam, as defined by the U.S. Department of Agriculture;

(2) Runoff shall be filtered through a basin and/or vegetated swale, to enhance water quality, prior to discharge into a perforated pipe system;

(3) There shall be at least three feet of vertical separation between the bottom of the perforated pipe trench and the seasonal high water table;

(4) All underground recharge pipes shall be 360 degree perforated;

(5) The required pipe size shall be determined based on the peak discharge for the required post-development design storm; and

(6) In addition to the standards set forth above, all underground infiltration systems shall be designed in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey," N.J.A.C. 2:90.

2. Discouraged: The following list represents techniques which are not likely to be approved, unless it can be clearly documented that the use of other "Conditionally Acceptable" techniques has been maximized or is infeasible for engineering reasons.

i. Underground storage is not effective and cannot be utilized as a means to provide water quality treatment of stormwater. Underground storage for the purpose of controlling stormwater volume is discouraged, but may be acceptable in limited cases, provided that the following conditions are satisfied:

(1) The use of other "Conditionally Acceptable" stormwater management techniques, as described in (d)1 above, has been maximized, or can be documented as infeasible. Complete justification for the exclusion of "Conditionally Acceptable" techniques must be provided as part of the permit application submission; and

(2) Water quality treatment shall be provided prior to stormwater discharge to the underground storage system.

ii. The use of sediment traps and oil/grease separators is generally discouraged because they have proven ineffective, but they may be acceptable in limited cases, provided that the following conditions are satisfied:

(1) The use of other "Conditionally Acceptable" techniques, as described in (d)1 above, has been maximized, or can be documented as infeasible. Complete justification for the exclusion of "Conditionally Acceptable" techniques must be provided as part of the permit application submission;

(2) The use of sediment traps and oil/grease separators shall be limited to drainage areas less than 0.1 acre in size; and

(3) For drainage areas greater than 0.1 acre in size, the use of sediment traps and oil/grease separators shall be combined with other stormwater management techniques as described in this subsection.

iii. The use of porous asphalt pavement is discouraged, due to the problems associated with continued maintenance and functioning of these types of infiltration systems. As set forth in this subparagraph, the surface of porous asphalt pavement shall be cleaned regularly to avoid becoming clogged by fine grained material. Porous pavement does not include gravel, crushed shell or paver blocks (non-grout). The use of porous pavement may be acceptable in limited cases, provided that the following conditions are satisfied:

(1) The use of other "Conditionally Acceptable" techniques, as described in (d)1 above, has been maximized, or can be documented as infeasible. Complete justification for the exclusion of "Conditionally Acceptable" techniques must be provided as part of the permit application submission;

(2) The soil texture shall be sand, loamy sand or sandy loam, as defined by the U.S. Department of Agriculture;

(3) The use of porous asphalt pavement shall be limited to light traffic areas only, such as parking areas;

(4) The areas of porous asphalt pavement shall be adequately buffered, through vegetative screening, to avoid adjacent sources of aeolian sand and silt;

(5) The application shall include a strict maintenance schedule, which may be required to include, but not be limited to, vacuum sweeping on a weekly basis and high pressure water washing of the pavement on a monthly basis;

(6) The paving uses no asphalt sealers; and

(7) The use of sand during periods of snow is prohibited on porous asphalt areas.

(e) The species and quantity of native or non-invasive exotic vegetation used as part of a stormwater management system design shall be consistent with the standards and specifications of the local Soil Conservation District. In general, the use of vegetation shall be limited to low maintenance native species, shall be pest resistant, and shall be drought or water tolerant, depending on the specific application. The use of native species is encouraged for all vegetated swales.

(f) Standards relevant to stormwater management system maintenance are as follows:

1. The long-term maintenance of stormwater management systems is a critical factor in the ongoing functioning of these systems. In cases where these existing systems have failed, the most common cause is inadequate maintenance of the system. Therefore, the following maintenance requirements shall be included as part of all stormwater management plans; shall be specifically identified on the site plans and in a stormwater system maintenance report for any proposed project; and, if required by the Program, shall be recorded with the deed for the property in question:

i. All information regarding the long-term maintenance of proposed stormwater management systems shall be provided as part of the initial permit application submission;

ii. The party or parties responsible for long-term maintenance of the system shall be clearly designated, and documentation of the assumption of this responsibility shall be provided as part of the permit application submission;

iii. All maintenance records shall be written, maintained and provided to the Department upon request;

iv. Maintenance of detention basins shall include, but not be limited to, the following activities:

(1) Visual inspection of all components of the stormwater management system at least twice each year;

(2) Removal of silt, soil, litter and other debris from all catch basins, inlets and drainage pipes, on a twice-yearly basis;

(3) Maintenance, including grass cutting, and replacement (if necessary) of all landscape vegetation within the basins, at least once each year;

(4) Removal of silt from within the basins at least once each year, or more frequently if noticeable buildup occurs, for disposal in an acceptable location; and

(5) The basin bottoms shall be aerated at least once each year, and shall be scraped and replanted at least once every five years, to prevent the sealing of the basin bottom by silt deposits.

v. Maintenance of constructed wetlands shall include, but not be limited to, the following:

(1) Visual inspection of all components of the system at least once every six months;

(2) Removal of silt, litter and other debris from all catch basins, inlets and drainage pipes at least once every six months, or as required;

(3) Vegetation harvesting at least once each year; and

(4) The approval of a stormwater management system which involves newly constructed wetlands on an upland site will automatically include the issuance of a Freshwater Wetlands General Permit 1 for maintenance of the wetlands, which shall be renewed by the permittee every five years.

vi. Maintenance of wet ponds/retention basins shall include, but not be limited to, annual monitoring of water quality, dissolved oxygen, vegetative growth and fish population.

vii. Maintenance of infiltration facilities shall include, but not be limited to:

(1) Annual tilling operation to maintain infiltration capacity, with revegetation as necessary; and

(2) Sediment removal shall be followed by retilling, at a time when the facility is thoroughly dry.

viii. Maintenance of swales, including, but not limited to, removal of grass clippings and leaves, shall be performed so that the facilities remain in working order.

ix. Maintenance of underground perforated pipe infiltration systems shall include, but not be limited to:

(1) Visual inspection of all system components at least twice each year;

(2) Vacuuming of all storm sewer inlets once every six months (frequency of vacuuming may be adjusted if first year maintenance records indicate that sediment and debris accumulation is insignificant; and

(3) Reverse flushing and vacuuming shall be required if system inspections indicate significant accumulation of sediment in the pipes.

(g) Rationale: Stormwater runoff is a natural process of surface hydrology, whereby precipitation flows on the surface of the ground into a surface water body or into the soil through infiltration. Development changes this process as the volume and rate of runoff increase in response to changes in the natural landscape, including grading, paving and construction. Unless managed properly, the stormwater runoff generated by buildings and paved surfaces has the potential to adversely affect the coastal environment in several ways: increased erosion; increased flooding in streams; destruction of flood plain vegetation; contamination of ground and surface waters through the introduction of pollutants and sediment; increased turbidity in surface waters; and decreased aquatic productivity.

The two primary objectives in designing a stormwater management system are water quality control and flood/erosion control. Many of the concerns related to water quality control and flood/erosion control can best be addressed during the site planning and design phase of a development. Non-structural management practices, including land use, site design and source controls for nonpoint source pollution control shall be used in the planning of a project, unless it can be demonstrated that these practices are infeasible

on a particular site. Changes in land use can often reduce the scope and cost of required detention provisions by means of appropriate changes in runoff coefficients.

In order to reduce the potential for adverse impacts from stormwater runoff, a minimum disturbance and minimum maintenance goal should apply to landscaping on a proposed project site. Where practical, clearing or site grading should only occur on land required for the structure and any related utilities, drives, walks and active recreational facilities. Where land disturbance is necessary and existing vegetation is proposed to be removed, alternative landscaping including ground coverings, shade trees and shrubbery should be utilized. Native plant species should be established, and lawns should be avoided where conditions are poor or indicate problems with turf establishment and maintenance.

As a design guideline, the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) have established a threshold of 80% reduction of the average annual total suspended solids (TSS) loading after construction has been completed. The removal of 80% of TSS is assumed to control to some degree heavy metals, phosphorous and other pollutants. In some cases, local conditions such as steep slopes may preclude the attainment of this goal. However, the design of stormwater management systems shall include adequate provisions, as described in this rule to satisfy the 80% TSS reduction goal.

The requirements of this section have been established to conform with the New Jersey Surface Water Quality Standards (N.J.A.C. 7:9-4 et seq.). Certain guidelines and standards discussed in this section have been previously developed and discussed in reports titled "Controlling Urban Runoff: A Practical Manual For Planning And Designing Urban BMP's", written by Thomas Schueler, Metropolitan Washington Council of Governments, dated 1987, and "A Current Assessment of Urban Best Management Practices; Techniques for Reducing Non-Point Source Pollution in the Coastal Zone", written by Thomas Schueler, et al., Metropolitan Washington Council of Governments, dated March 1992. Further information and details may be found in these reports.]

(a) If a project or activity meets the definition of "Major Development" at N.J.A.C. 7:8-1.2, then the project or activity shall comply with the Stormwater Management rules at N.J.A.C. 7:8.

CHAPTER 8

STORMWATER MANAGEMENT

SUBCHAPTER 1. GENERAL PROVISIONS

7:8-1.1 Scope and purpose

(a) This chapter establishes general requirements for stormwater management plans and stormwater control ordinances, as well as content requirements and procedures for the adoption and implementation of regional stormwater management plans and municipal stormwater management plans under the Municipal Land Use Law N.J.S.A. 40:55D-1 et seq.; the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq.: the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.; and the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq.; and implementing rules.

(b) This chapter establishes design and performance standards for stormwater management measures required by rules pursuant to the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq.; the Coastal Area Facility Review Act, N.J.S.A. 13:19-1 et seq.; the Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq.; the Waterfront Development Law, N.J.S.A. 12:5-3; the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq.; and the Dam Safety Act, N.J.S.A. 58:4-1 et seq.

(c) This chapter establishes safety standards for stormwater management basins pursuant to N.J.S.A. 40:55D-95.1.

7:8-1.2 Definitions

The following words and terms, when used in this chapter, shall have the following meanings unless the context clearly indicates otherwise.

"Agricultural development" means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacture of agriculturally related products.

"CAFRA Planning Map" means the geographic depiction of the boundaries for Coastal Planning Areas, CAFRA Centers, CAFRA Cores and CAFRA Nodes pursuant to N.J.A.C. 7:7E-5B.3 as designated by the State Planning Commission.

"CAFRA Centers, Cores or Nodes" means those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

"Compaction" means the increase in soil bulk density.

"Core" means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

"County review agency" means an agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

1. A county planning agency; or

2. A county water resources association created under N.J.S.A. 58:16A-55.5, if the ordinance or resolution delegates authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

"Department" means the Department of Environmental Protection.

"Designated Center" means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

"Design engineer" means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

"Development" means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

"Drainage area" means a geographic area within which water, sediments, and dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

"Environmentally constrained area" means the following areas where the physical alteration of the land is in some way restricted, either through regulation, easement, deed

restriction or ownership such as: wetlands, floodplains, threatened and endangered species sites or designated habitats, and parks and preserves.

“Environmentally critical area” means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitats of endangered or threatened species; large areas of contiguous open space or upland forest; steep slopes; and well head protection and groundwater recharge areas.

"Empowerment Neighborhoods" means neighborhoods designated by the Urban Coordinating Council "in consultation and conjunction with" the New Jersey Redevelopment Authority pursuant to N.J.S.A. 55:19-69.

“Erosion” means the detachment and movement of soil or rock fragments by water, wind, ice or gravity.

"Impervious surface" means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

“Infiltration” is the process by which water that seeps into the soil from precipitation.

“Lead Planning Agency” means one or more public entities having stormwater management planning authority designated by the regional stormwater management planning committee pursuant to N.J.A.C. 7:8-3.2 as the primary representative of the committee.

"Major development" means any “development” shown in any site plan or subdivision plan that has not received preliminary or final approval by [insert the effective date of this chapter] that provides for ultimately disturbing one or more acres of land or

increasing impervious surface by one-quarter acre or more. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Projects undertaken by any government agency which otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-et seq. are also considered "major development."

"Municipality" means any city, borough, town, township, or village.

"Node" means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a Compact form.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

"Person" means any individual, corporation, company, partnership, firm, association, political subdivision of this State and any state, interstate or federal agency.

"Pollutant" means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. "Pollutant" includes both hazardous and nonhazardous pollutants.

"Recharge" means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

"Sediment" means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

"Site" means the lot or lots upon which a major development is to occur or has occurred.

"Soil" means all unconsolidated mineral and organic material of any origin.

"State Development and Redevelopment Plan Metropolitan Planning Area (PA1)" means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the state's future redevelopment and revitalization efforts.

"State Plan Policy Map" is defined as the geographic application of the State Development and Redevelopment Plan's goals and statewide policies, and the official map of these goals and policies.

"Stormwater" means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities.

"Stormwater runoff" means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

"Stormwater management basin" means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

"Stormwater management measure" means any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal nonstormwater discharges into stormwater conveyances.

"Stormwater management planning agency" means a public body authorized by legislation to prepare stormwater management plans.

"Stormwater management planning area" means the geographic area for which a stormwater management planning agency is authorized to prepare stormwater management plans, or a specific portion of that area identified in a stormwater management plan prepared by that agency.

"Tidal Flood Hazard Area" means a flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

"Urban Coordinating Council Empowerment Neighborhood" means a neighborhood given priority access to state resources through the New Jersey Redevelopment Authority.

"Urban Enterprise Zones" means a zone designated by the New Jersey Urban Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et seq.

"Urban Redevelopment Area" is defined as previously developed portions of areas:
(1) delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;

(2) CAFRA Centers, Cores or Nodes,

(3) Urban Enterprise Zones; and

(4) Urban Coordinating Council Empowerment Neighborhoods.

"Waters of the State" means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

"Wetlands" or "wetland" means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

7:8-1.3 Program information

Questions or submissions regarding this chapter should be directed to the Nonpoint Source Program, Watershed Management, New Jersey Department of Environmental Protection, P.O. Box 418, Trenton, New Jersey 08625.

7:8-1.4 Severability

If the provisions of any section, subsection, paragraph, or clause of this chapter shall be judged invalid by a court of competent jurisdiction, such order or judgment shall not affect or invalidate the remainder of any section, subsection, paragraph, or clause of this chapter.

7:8-1.5 Relationship to other regulatory programs

(a) Nothing in this chapter shall be construed as preventing the Department or other agencies or entities from imposing additional or more stringent stormwater management requirements necessary to implement the purposes of any enabling legislation including those measures necessary to achieve the Surface Water Quality Standards at N.J.A.C. 7:9B.

(b) If a stormwater management measure is used as a soil erosion or sediment control measure, the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., shall also apply.

(c) These stormwater requirements are the Department's standards referenced by the stormwater management provisions of the Residential Site Improvement Standards at N.J.A.C 5:21-7.

SUBCHAPTER 2. GENERAL REQUIREMENTS FOR STORMWATER MANAGEMENT PLANNING

7:8-2.1 Scope

This subchapter provides general principles applicable to all stormwater management plans and stormwater control ordinances, including the goals of stormwater management planning, the process for identification of stormwater management planning agencies, and stormwater management plan requirements.

7:8-2.2 Goals of stormwater management planning

(a) All stormwater management plans and stormwater control ordinances shall be designed to:

1. Reduce flood damage, including damage to life and property;

2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;

3. Reduce soil erosion from any development or construction project;

4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;

5. Maintain groundwater recharge;

6. Prevent, to the greatest extent feasible, an increase in nonpoint pollution;

7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;

8. Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water;

9. Protect public safety through the proper design and operation of stormwater management basins.

7:8-2.3 Stormwater Management Planning Agencies

(a) The following entities may be Stormwater Management Planning Agencies provided they are authorized under their enabling legislation to prepare stormwater management plans:

i. municipality;

ii. county;

iii. county water resources agency or association;

iv. designated planning agency under N.J.A.C. 7:15;

v. Soil Conservation District;

vi. the Delaware River Basin Commission;

vii. the Pinelands Commission;

viii. the Delaware and Raritan Canal Commission;

ix. the New Jersey Meadowlands Commission;

x. the Department; or

xi. other regional, State or interstate agencies.

7:8-2.4 Stormwater Management Plan Requirements

(a) A stormwater management plan shall include structural and nonstructural stormwater management strategies necessary to meet the stormwater management goals of this chapter.

(b) A regional stormwater management plan shall comply with the requirements of this subchapter and N.J.A.C 7:8-3.

(c) A municipal stormwater management plan shall comply with the requirements of this subchapter and N.J.A.C 7:8-4.

(d) A stormwater management plan shall incorporate the safety standards for stormwater management basins at N.J.A.C. 7:8-6.

(e) In developing a stormwater management plan and identifying appropriate stormwater management measures thereunder, each stormwater management planning agency shall consider the physical characteristics and ecological resources of the stormwater management planning area.

(f) A stormwater management plan and any stormwater management ordinance shall be coordinated with any other stormwater management plans related to the same river basin or drainage area.

7:8-2.5 Exemptions

A municipality or other entity conducting stormwater management planning under this Chapter may petition the Department at the address provided at N.J.A.C. 7:8 -1.3 above for an exemption to the requirements of this chapter by submitting documentation to demonstrate that, if granted, the exemption will not result in an increase in flood damage, water pollution or constitute a threat to the public safety.

SUBCHAPTER 3. REGIONAL STORMWATER MANAGEMENT PLANNING

7:8-3.1 Scope

(a) This subchapter describes stormwater management planning and implementation at the regional level, including plan elements; planning process; characterization; development of drainage area-specific objectives and standards; selection of stormwater management measures; strategy for implementing the measures and evaluating the effectiveness of the regional stormwater management plan; plan review, adoption, amendment or revision; and implementation and periodic evaluation of the plan.

(b) A regional stormwater management plan shall address stormwater-related water quality, ground water recharge and/or water quantity impacts of new and existing land uses in a regional stormwater management planning area. A regional stormwater management planning area shall consist of one or more drainage areas. For example, a drainage area could be a hydrologic unit code 14 (HUC14) as defined by the United States Geological Survey.

7:8-3.2 Regional stormwater management planning committee and Lead Planning Agency

(a) A regional stormwater management planning committee (the committee) shall be established for the purposes of creating a regional stormwater management plan.

(b) A person or entity seeking to establish a regional stormwater management committee shall solicit participation from municipalities, interstate agencies, regional agencies, counties, designated planning agencies under N.J.A.C. 7:15, Soil Conservation Districts, regional environmental commissions, public water supply and wastewater treatment utilities and agencies, lake associations, watershed associations, the watershed management planning area public advisory committee, environmental organizations, businesses, the Department and other appropriate State and Federal agencies and, members of the general public in the drainage area(s) to be addressed by the proposed plan.

(c) The regional stormwater management planning committee shall designate a Lead Planning Agency, which shall be recognized as the primary contact for the committee. The regional stormwater management planning committee, through the Lead Planning Agency, shall:

1. Prepare the regional stormwater management plan;

2. Coordinate the regional stormwater management planning process with any applicable watershed management area planning process;

3. Provide opportunities for public participation throughout the regional stormwater management planning process; and

4. Perform other activities appropriate to facilitate the regional stormwater management planning process, including mediation, public information, and providing technical assistance and grants or other financial assistance to municipalities and/or local or regional agencies pursuant to N.J.S.A. 40:55D-99 or other applicable authority.

(d) A request for recognition as a regional stormwater management planning committee

shall be submitted to the Department at the address listed in N.J.A.C. 7:8-1.3 by the Lead Planning Agency, and include the following information:

1. A draft work plan and schedule for completing a regional stormwater management plan;

2. A copy of the mailing list used to solicit participation, including the entities identified in (b) above;

3. A copy of the letter of invitation to participate in the committee;

4. A copy of each response to the letter of invitation; and

5. In cases where no response from a public entity to the letter of invitation is received within 60 days, the group shall send a follow-up request by certified mail, return receipt requested, and submit proof of such follow-up.

(e) The Department shall respond in writing within 45 days of the receipt of a complete request for recognition as a regional stormwater management planning committee. The Department shall either approve the application, request additional information or deny the request for recognition. Denials will include a justification for the decision.

7:8-3.3 Regional stormwater management plan and elements

(a) A regional stormwater management plan shall incorporate, at a minimum, the following elements:

1. Identification of the Lead Planning Agency and a description of the structure and members of the committee;

2. A statement of authority to develop and implement a stormwater management plan from each public entity that is represented on the regional stormwater management planning committee.

3. A characterization and assessment of the regional stormwater management planning area prepared in accordance with N.J.A.C. 7:8-3.4;

4. A statement of drainage area-specific water quality, groundwater recharge, and water quantity objectives established under N.J.A.C. 7:8-3.5;

5. The drainage area -specific stormwater-related water quality, groundwater recharge and water quantity design and performance standards established under N.J.A.C. 7:8-3.6;

6. The stormwater management measures selected in accordance with N.J.A.C. 7:8-3.7 and a summary of the rationale for the selection of each measure;

7. A description of the strategy for implementing the selected stormwater management measures for the regional stormwater management planning area and for evaluating the effectiveness of the regional stormwater management plan in accordance with N.J.A.C. 7:8-3.8, including a long-term monitoring program; and

8. To the extent elements of the plan do not represent the consensus of the committee, the plan shall identify and provide a discussion of the majority and minority positions.

(b) The regional stormwater management plan may also include:

1. Innovative stormwater measures and strategies such as nonpoint source pollutant trading, mitigation strategies, or special protection measures; and

2. A stream corridor protection plan to address protection of areas adjacent to waterbodies. For waterbodies subject to N.J.A.C. 7:8-5.5(h), the plan shall provide, at a minimum, protections equivalent to those provided at N.J.A.C. 7:8-5.5(h) and demonstrate that the functional value and overall condition of the special water resource protection area will be maintained or enhanced.

7:8-3.4 Characterization and assessment of the regional stormwater management planning area

(a) The regional stormwater management plan shall include a characterization and assessment that addresses the following components, unless the committee determines that a component is not appropriate for the regional stormwater management planning area and provides a rationale for not including the component:

1. Maps showing the following information. Maps developed on a Geographical Information System shall meet the Digital Data standards in N.J.A.C. 7:1D unless a rationale for a different format is provided.

i. The regional stormwater management planning area boundary;

ii. Existing land uses;

iii. Projected land uses assuming full development under existing zoning;

iv. Soil mapping units based on the detailed soil maps in County Soil Surveys published by the U.S. Department of Agriculture or, in areas for which County Soil Surveys are not available, on information obtained from Soil Conservation Districts;

v. Topography based on the U.S. Geological Survey Topographic Map, 7.5 minute

quadrangle series, or other sources of information depicting topography in similar or greater detail;

vi. Water bodies based on detailed map sheets in County Soil Surveys published by the U.S. Department of Agriculture; the U.S. Geological Survey Topographic Map, 7.5 minute quadrangle series; or other sources of information depicting water bodies in similar or greater detail;

vii. Coastal wetlands based on maps prepared by the Department under the Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq., and freshwater wetlands based on maps prepared by the Department under the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq.;

viii. Flood hazard areas based on delineations made by the Department under the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq. For a water body for which the Department has not delineated the flood hazard area, a map of the flood hazard area prepared in accordance with N.J.A.C. 7:13 is acceptable;

ix. Groundwater recharge areas and well head protection areas based on maps prepared by the Department under N.J.S.A. 58:11A-13 or ordinances of an affected municipality;

x. Environmentally constrained areas and environmentally critical areas;

xi. River areas designated under the New Jersey Wild and Scenic Rivers Act, N.J.S.A. 13:8-45 et seq., or the Federal Wild and Scenic Rivers Act, 16 U.S.C. 1278 et seq.;

xii. For each waterbody in the regional stormwater management planning area, identification of the waterbody or waterbody segment, the drainage area, and the classification of the waterbody pursuant to N.J.A.C. 7:9B-1.15;

xiii. Each waterbody designated as a water quality limited surface water pursuant to

N.J.A.C. 7:15-6;

xiv. Man-made stormwater conveyance, storage and discharge systems, including municipal separate storm sewer outfall pipes and the drainage areas as appropriate for these outfall structures; and

xv. Potable surface water intakes and public water supply reservoirs.

2. A map showing jurisdictional boundaries within the regional stormwater management planning area of municipal, county, and other agencies with responsibility for implementing stormwater management;

3. Identification of the physical characteristics of the regional stormwater management planning area pertinent to stormwater management, such as slopes, swales and impoundment areas as necessary for completing the analysis in N.J.A.C. 7:8-3.4(a)4;

4. A water quality, groundwater recharge and water quantity hydrologic and hydraulic model or analysis of the regional stormwater management planning area which addresses existing land uses and projected land uses assuming full development under existing zoning and taking into account permanently preserved lands;

5. An identification and evaluation of existing municipal, county, State, Federal, and other stormwater-related groundwater recharge, water quality and water quantity regulations and programs shall be conducted, including, where applicable, programs to develop total maximum daily loads (TMDLs) in accordance with N.J.A.C. 7:15-7; and

6. A summary of information that has been identified as useful for purposes of stormwater management planning but that is not available for technical, financial, or other reasons.

(b) The Department encourages the use of existing information to the extent that it is available to minimize the cost of data acquisition, such as information available on the Department's Geographical Information System web site (www.state.nj.us/dep/gis) or as developed through a watershed planning process.

(c) The characterization and assessment shall include information on locations and activities outside the regional stormwater management planning area that drain into the planning area (for example, stormwater originating in an adjacent drainage area that is transferred to the stormwater management planning area).

(d) Using the modeling or other information obtained under (a) through (c) above, the stormwater-related water quality impacts of existing land uses and projected land uses assuming full development under existing zoning shall be identified and ranked in accordance with the following process:

1. Inventory existing and potential stormwater-related pollutant sources and stormwater-related pollutants in the regional stormwater management planning area.

i. Stormwater-related pollutant sources include, for example, urban and suburban development, roads, storm sewers, agriculture, mining, and waterfront development.

ii. Stormwater-related pollutants include, for example, nutrients, pathogens, hydrocarbons, metals, pesticides, sediments, and suspended solids.

2. For surface water bodies and/or segments thereof and aquifers and/or portions thereof in the regional stormwater management planning area, identify and describe the existing or designated uses that are or may be adversely affected by stormwater-related pollutants, and to the extent feasible, identify the source(s) of the pollutant. The use of the report and

list prepared by the Department to comply with Federal Clean Water Act, Section 303(d) and 305(b) (33 USC 1313(d) and 1315(b)) and underlying data, including biological assessments, is encouraged.

3. Identify and rank the most significant existing and potential stormwater-related pollutants and, for each pollutant, identify and rank the sources.

(e) Using the modeling or other information obtained under (a) through (c) above for stormwater-related water quantity impacts and stormwater-related groundwater recharge impacts of existing and projected land uses assuming full development under existing zoning, identify and describe the most significant existing and potential stormwater-related water quantity problems, including flooding, erosion, mosquitoes, base-flow reduction, ground water depletion, and associated ecosystem impacts. The problems shall be ranked based on consideration of threat to public health, safety, and welfare as evidenced by history of or potential for flood damage; risk of loss of or damage to water supplies; and risk of damage to the biological integrity of water bodies.

7:8-3.5 Drainage area-specific water quality, groundwater recharge and water quantity objectives

(a) The regional stormwater management plan shall identify drainage area -specific water quality, groundwater recharge and water quantity objectives that are consistent with the goals of stormwater management planning at N.J.A.C. 7:8-2.3, and address each of the stormwater-related pollutant sources and pollutants ranked under N.J.A.C. 7:8-3.4(d) and the water quantity and groundwater recharge problems ranked under N.J.A.C. 7:8-3.4(e). The objectives shall address the elimination, reduction, or minimization of stormwater-related impacts associated with new and existing land uses. The objectives developed for the regional stormwater management plan may take into consideration environmental, social, and economic factors.

(b) Notwithstanding (a) above, the drainage area -specific objectives for major development shall provide, at a minimum, the protection that would be achieved through the application of N.J.A.C. 7:8-5, Design and Performance Standards for Stormwater Management Measures.

(c) If a TMDL has been established pursuant to N.J.A.C. 7:15 for a waterbody or waterbody segment in the regional stormwater management planning area, drainage area-specific objectives shall incorporate the loading reductions established in the TMDL for stormwater sources of pollution. In addition, if a waterbody or waterbody segment in the regional stormwater management planning area is on the Department's list prepared to comply with Federal Clean Water Act, Section 303(d) (33 USC 1313(d)) for one or more designated uses by stormwater runoff, then drainage area objectives shall be included that address the pollutants or pollution for which the waterbody is threatened or impaired.

7:8-3.6 Drainage area-specific design and performance standards

(a) The regional stormwater management plan shall identify drainage area-specific design and performance standards in order to meet the drainage area-specific water quality, groundwater recharge and water quantity objectives identified under N.J.A.C. 7:8-3.5.

(b) Drainage area-specific design and performance standards may include performance standards for control of stormwater quantity, erosion, groundwater recharge and stormwater quality, as well as design standards for particular structural and nonstructural stormwater management strategies.

(c) The design and performance standards for stormwater management measures for major development described in N.J.A.C. 7:8-5 shall be incorporated into the regional stormwater management plan. Alternative drainage area -specific design and

performance standards may be developed provided the alternative standard is at least as protective as would be achieved under N.J.A.C. 7:8-5 when considered on a regional stormwater management planning area basis.

(d) For structural stormwater management measures, drainage area-specific design and performance standards shall conform to the general standards at N.J.A.C. 7:8-5.7.

(e) Drainage area-specific design and performance standards do not have to be uniform throughout a drainage area provided the drainage area, when considered in its entirety, satisfies N.J.A.C. 7:8-5.

7:8-3.7 Selection of stormwater management measures

(a) The regional stormwater management plan shall identify stormwater management measures necessary to achieve the drainage area -specific water quality, groundwater recharge and water quantity objectives developed in accordance with N.J.A.C. 7:8-3.5, and design and performance standards developed in accordance with N.J.A.C. 7:8-3.6.

(b) Stormwater management measures in the following categories shall be considered and selected, as appropriate:

1. Stormwater management measures for new land uses;

2. Stormwater management measures for existing land uses, including, for example, retrofit measures for the modification of existing structural stormwater management measures or other structures affecting stormwater runoff; elimination of illicit or illegal discharges; prevention or minimization of the exposure of pollutants to stormwater; and control of floatables;

3. Stormwater management measures that enhance, protect, and/or preserve land or water areas possessing characteristics or features that provide for flood control, maintenance or improvement of water quality, or conservation of natural resources (for example, land use controls, local and regional open space plans and taxes, buffer zones, redirecting, recharging or minimizing stormwater discharges, pretreatment and/or end-of-pipe treatment); and

4. Public education programs that address stormwater quantity and quality.

(c) A written rationale shall be provided for each selected stormwater management measure, including an analysis of feasibility, benefits and costs, estimated percent pollutant load reduction and anticipated performance longevity;

(d) Each selected stormwater management measure shall include, as appropriate, a program for preventative and corrective maintenance, including a long-term implementation schedule and identification of the entity responsible for implementation and maintenance.

7:8-3.8 Strategy for implementing and evaluating effectiveness of stormwater management measures

(a) The regional stormwater management plan shall include a strategy for implementing the stormwater management measures. The Lead Planning Agency or another entity designated by the committee shall be responsible for coordination and tracking of the implementation of the regional stormwater management plan, including the long-term monitoring program.

(b) The implementation strategy shall:

1. Identify agencies and/or entities necessary to implement the measures and conduct the long-term monitoring program;

2. Identify the respective measures and/or monitoring each agency and/or entity will implement and the enabling mechanisms by which the measures will be implemented, including, for example, new or amended municipal ordinances or interagency agreements;

3. Establish a schedule for the implementation of the measures based on priority, including specific milestones for all mechanisms identified under (b)2 above;

4. Provide an estimate of short term and long term implementation costs to be incurred; and

5. Identify existing and potential private, local, State, and Federal funding sources to implement the regional stormwater management plan.

(c) The implementation strategy shall include a long-term monitoring program that will provide information about land use, water quality, water quantity, groundwater resources and riparian and aquatic habitat condition, as appropriate. Information for the monitoring program may include data obtained through watershed management, local, county, State, interstate, and/or Federal monitoring programs, including volunteer monitoring programs.

(d) The implementation strategy shall include a procedure for evaluating and then updating as necessary, at least every five years, the effectiveness of the implemented measures in achieving the objectives and design and performance standards established in the regional stormwater management plan.

7:8-3.9 Regional stormwater management plan review, adoption, and amendment and/or

revision

(a) Upon completion of a regional stormwater management plan, the Lead Planning Agency shall submit the plan to the Department and, if applicable, to the designated water quality management planning agency as an amendment to the areawide water quality management plan(s) in accordance with the Water Quality Management Planning Rules at N.J.A.C. 7:15.

(b) In reviewing a regional stormwater management plan submitted under (a) above, the Department shall determine whether the plan conforms to the requirements of this chapter. The Department will disapprove, return for additional information or proceed with a proposed amendment in accordance with N.J.A.C. 7:15-3.4(g).

(c) Modifications to an adopted regional stormwater management plan shall be processed as an amendment or revision in accordance with N.J.A.C. 7:15-3.4(b)5 or 3.5(b)5, as applicable.

7:8-3.10 Implementation of adopted regional stormwater management plan

(a) Once the regional stormwater management plan has been adopted pursuant to N.J.A.C. 7:8-3.9, implementation responsibilities are as follows:

1. The Department will use the adopted regional stormwater management plan as the basis for reviewing the stormwater management aspects of projects or activities regulated pursuant to Coastal Permit Program rules, N.J.A.C. 7:7; the Freshwater Wetland Protection Act rules, N.J.A.C. 7:7A; the Coastal Zone Management rules, N.J.A.C. 7:7E; the Flood Hazard Area Control Act rules, N.J.A.C. 7:13; the New Jersey Pollutant Discharge Elimination System rules, N.J.A.C 7:14A; and the Dam Safety Standards, N.J.A.C. 7:20. The requirements of this chapter are considered to be the minimum

stormwater standards. Additional requirements may be imposed as necessary under the respective programs.

2. Each municipality in the regional stormwater management planning area shall incorporate the applicable provisions of the regional stormwater management plan into a new or amended municipal stormwater management plan and ordinances.

3. In accordance with the Residential Site Improvement Standards at N.J.A.C. 5:21-7, if a stormwater management plan for the region has been approved by the Department, stormwater management systems must conform with that plan.

4. The Department shall not issue a permit for a project or activity that conflicts with an Areawide Water Quality Management Plan pursuant to N.J.A.C. 7:15-3.1.

SUBCHAPTER 4. MUNICIPAL STORMWATER MANAGEMENT PLANNING

7:8-4.1 Scope

This subchapter describes stormwater management planning and implementation at the municipal level, including plan elements, county review and technical assistance, the schedule for adoption of the plan and ordinances, and variance or exemption from design and performance standards for stormwater management measures.

7:8-4.2 Municipal stormwater management plan and elements

(a) A municipal stormwater management plan shall address stormwater-related water quality, groundwater recharge and water quantity impacts of major development, and may also address stormwater-related water quality, water quantity and groundwater recharge impacts of existing land uses. For purposes of this subchapter, major

development is limited to projects that ultimately disturb one or more acres of land.

(b) A municipal stormwater management plan and stormwater control ordinance(s) shall conform with applicable regional stormwater management plan(s).

(c) A municipal stormwater management plan shall, at a minimum:

1. Describe how the municipal stormwater management plan will achieve the goals of stormwater management planning set forth at N.J.A.C. 7:8-2.3;

2. Include maps showing water bodies based on Soil Surveys published by the U.S. Department of Agriculture; the U.S. Geological Survey Topographic Map, 7.5 minute quadrangle series; or other sources of information depicting water bodies in similar or greater detail;

3. Map groundwater recharge areas and well head protection areas based on maps prepared by the Department under N.J.S.A. 58:11A-13 or a municipal ordinance;

4. Describe how the municipal stormwater management plan incorporates design and performance standards in N.J.A.C.7: 8-5 or alternative design and performance standards adopted as a part of a regional stormwater management plan or Water Quality Management Plan;

5. Describe how adequate long-term operation as well as preventative and corrective maintenance (including replacement) of the selected stormwater management measures will be ensured;

6. Describe how the plan will ensure compliance with Safety Standards for Stormwater Management Basins at N.J.A.C. 7:8-6;

7. Describe how the municipal stormwater management plan is coordinated with the appropriate Soil Conservation District and any other stormwater management plans, including any adopted regional stormwater management plan, prepared by any stormwater management planning agency related to the river basins or drainage areas to which the plans and/or ordinances apply;

8. Evaluate the extent to which the municipality's entire master plan (including the land use plan element), official map and development regulations (including the zoning ordinance) implement the principals expressed in N.J.A.C. 7:8-5.3(b). This evaluation shall also be included (with updating as appropriate) in the reexamination report adopted under N.J.S.A. 40:55D-89.

9. Include a map of the municipality showing:

i. Projected land uses assuming full development under existing zoning, and

ii. The hydrologic unit code 14 (HUC14) drainage areas as defined by the United States Geological Survey; and an estimate, for each HUC14 drainage area, of the total acreage in the municipality of impervious surface and associated future nonpoint source pollutant load assuming full build out of the projected land uses.

10. The municipality may elect to document that it has a combined total of less than one square mile of vacant or agricultural lands rather than provide the information required in (c)8 and (c)9 above. Agricultural lands may be excluded if the development rights to these lands have been permanently purchased or restricted by covenant, easement or deed. Vacant or agricultural lands in environmentally constrained areas may be excluded if the documentation also includes an overlay map of these areas at the same scale as the map under (c)10i below.

i. Documentation shall include an existing land use map at an appropriate scale to display the land uses of each parcel within the municipality. Such a map shall display the following land uses: residential (which may be divided into single family, two-to-four family, and other multi-family), commercial, industrial, agricultural, parkland, other public uses, semipublic uses, and vacant land.

11. In order to grant a variance or exemption from the design and performance standards in N.J.A.C.7: 8-5, the municipal plan shall include a mitigation plan that identifies what measures are necessary to offset the deficit created by granting the variance or exemption. The mitigation plan shall ensure that mitigation is completed within the drainage area and for the performance standard for which the variance or exemption was granted.

12. Include a copy of the recommended implementing stormwater control ordinance(s) requiring stormwater management measures.

7:8-4.3 Schedule for adoption of municipal stormwater management plan and ordinances

(a) A municipality shall adopt a municipal stormwater management plan as an integral part of its master plan and official map in accordance with the schedule in (a)1 or (a)2 below, whichever is sooner. The requirements in N.J.A.C. 7:8-4.2(c)8 and (c)9 are not operative until [insert the date 24 months from the effective date of this subchapter].

1. By the deadline established in a New Jersey Pollutant Discharge Elimination System permit obtained by the municipality for a municipal separate storm sewer system under N.J.A.C. 7:14A, or

2. By the next reexamination of the master plan under N.J.S.A. 40:55D-89, if a grant for 90 percent of the costs for the preparation of the municipal stormwater management plan

has been made available to a municipality by the Department;

(b) Within one year after the municipality adopts the municipal stormwater management plan, the municipality shall adopt stormwater control ordinance(s) to implement the adopted plan and shall submit the adopted municipal stormwater management plan and ordinance(s) to the county review agency for approval. The adopted municipal stormwater management plan and ordinance(s) shall not take effect without approval by the county review agency.

(c) The municipality shall amend the municipal stormwater management plan and stormwater control ordinance(s) as necessary and submit the amended plan and amended ordinance(s) to the county review agency for approval.

(d) The municipality shall reexamine the municipal stormwater management plan at each reexamination of the municipality's master plan in accordance with N.J.S.A. 40:55D-89.

(e) Within one year of the adoption of a regional stormwater management plan as an amendment to the Areawide Water Quality Management Plan, or an amendment thereto, each municipality within the regional stormwater management planning area shall amend their respective municipal stormwater management plans and stormwater control ordinance(s) to implement the regional stormwater management plan.

7:8-4.4 County review process

(a) A municipality shall submit a copy of the adopted stormwater management plan and stormwater control ordinance(s) to the county review agency and the Department.

(b) In reviewing the adopted municipal stormwater management plan and ordinance(s), the county review agency shall consider whether the plan and ordinance(s) conform with

the requirements of this chapter.

(c) In accordance with N.J.S.A. 40:55D-97, it is the county review agency's responsibility to review and approve, conditionally approve (specifying the necessary amendments to the plan and ordinance(s)) or disapprove the adopted municipal stormwater management plan and ordinance(s) within 60 calendar days of receipt of the plan and ordinance(s). If the county review agency does not approve, conditionally approve, or disapprove the plan or ordinance(s) within 60 calendar days, the plan and ordinance(s) shall be deemed approved. The county review agency shall issue a written decision to the municipality, with a copy to the Department.

(d) A municipal stormwater management plan and ordinance(s) approved under (c) above shall take effect immediately. A municipal stormwater management plan and ordinance(s) conditionally approved under (c) above shall take effect upon adoption by the municipality of the amendments specified by the county review agency.

(e) Within 30 days of the effective date of the municipal stormwater management plan and ordinance(s) under (d) above, the municipality shall place the plan and ordinance(s) on its website and notify the Department, the Soil Conservation District and State Soil Conservation Committee or:

1. Submit a copy of the approved municipal stormwater management plan and ordinance(s) to the Department; and

2. Provide notice of such approval to the Soil Conservation District and the State Soil Conservation Committee and, upon request, submit a copy of the approved plan and ordinance(s).

7:8-4.5 Reservation of rights

The Department reserves the right to review stormwater management plans and ordinances for compliance with this subchapter and make recommendations to correct any deficiencies.

7:8-4.6 Variance or exemption from the design and performance standards for stormwater management measures

A municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved municipal stormwater management plan and stormwater control ordinance(s), provided the municipal plan includes a mitigation plan in accordance with N.J.A.C. 7:8-4.2(c)11 and the municipality submits a written report to the county review agency and the Department describing the variance or exemption and the required mitigation.

SUBCHAPTER 5 DESIGN AND PERFORMANCE STANDARDS FOR STORMWATER MANAGEMENT MEASURES

7:8-5.1 Scope

(a) This subchapter establishes design and performance standards for stormwater management measures for major development intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies.

(b) The standards specified in this subchapter do not apply to major development if alternative design and performance standards that are at least as protective as would be achieved through this subchapter when considered on a regional stormwater management area basis are applicable under a regional stormwater management plan or adopted in accordance with this chapter or a Water Quality Management Plan adopted in accordance

with N.J.A.C. 7:15.

7:8-5.2 Stormwater management measures for major development

(a) Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards at N.J.A.C. 7:8-5.4 and 5.5. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies at N.J.A.C. 7:8-5.3 into the design. If these measures alone are not sufficient to meet these standards, structural stormwater management measures at N.J.A.C. 7:8-5.7 necessary to meet these standards shall be incorporated into the design.

(b) The development shall incorporate a maintenance plan under N.J.A.C. 7:8-5.8 for the stormwater management measures.

(c) Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly Helonias bullata (swamp pink) and/or Clemmys muhlnebergi (bog turtle).

(d) The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at N.J.A.C. 7:8-5.4 and 5.5:

1. The construction of an underground utility line provided that the disturbed areas are revegetated upon completion.

2. The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable.

1. The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 10 feet, provided that the access is made of permeable material.

(e) A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at N.J.A.C. 7:8-5.4 and 5.5 may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

1. The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;

2. The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of N.J.A.C. 7:8-5.4 and 5.5 to the maximum extent practicable;

3. The applicant demonstrates that, in order to meet the requirements at N.J.A.C. 7:8-5.4 and 5.5 existing structures currently in use, such as homes and buildings would need to be condemned.; and

4. The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under 3 above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate for requirements of N.J.A.C. 7:8-5.4 and 5.5 that were not achievable on-site.

7:8-5.3 Nonstructural stormwater management strategies

(a) The applicant shall identify the nonstructural strategies incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management strategies identified in (b) below into the design of a particular project, the applicant shall identify the measure and provide a basis for the contention.

(b) Nonstructural stormwater management strategies incorporated into site design shall:

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;

2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;

3. Maximize the protection of natural drainage features and vegetation;

4. Minimize the decrease in the pre-construction "time of concentration." "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed;

5. Minimize land disturbance including clearing and grading;

6. Minimize soil compaction;

7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;

9. Provide other preventative source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff. These source controls include, but are not limited to:

i. Site design features that help to prevent accumulation of trash and debris in drainage systems;

ii. Site design features that help to prevent discharge of trash and debris from drainage systems;

iii. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and

iv. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.

(c) Any land area used as a non-structural stormwater management measure to meet the performance standards in N.J.A.C. 7:8-5.4 and 5.5 shall be dedicated to a government agency, subjected to a conservation restriction filed with the appropriate County Clerk's office, or subject to Department approved or equivalent restriction that ensures the maintenance of that measure in perpetuity.

(d) Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual available from the Department through the address listed at N.J.A.C. 7:8-1.3.

7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards

(a) This section contains minimum design and performance standards to control erosion, encourage and control infiltration and groundwater recharge, and control stormwater runoff quantity impacts of major development.

1. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq. and implementing rules.

2. The minimum design and performance standards for groundwater recharge are as follows:

i. The design engineer shall, using the assumptions and factors for stormwater runoff calculations at N.J.A.C. 7:8-5.6, either:

(1) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual pre-construction groundwater recharge volume for the site; or

(2) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.

ii. This groundwater recharge requirement does not apply to projects that qualify as "urban redevelopment".

iii. The following types of stormwater shall not be recharged;

(1) Stormwater from areas of high pollutant loading. High pollutant loading

areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than 'reportable quantities' as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and

(2) Industrial stormwater exposed to "source material". "Source material" means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

iv. The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or downgradient of the groundwater recharge area.

3. In order to control stormwater runoff quantity impacts, the design engineer shall, use the assumptions and factors for stormwater runoff calculations at N.J.A.C. 7:8-5.6, complete one of the following:

i. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100 year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;

ii. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the 2, 10, and 100 year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area; or

iii. Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. The percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge;

(b) Any application for a new agricultural development that meets the definition of major development at N.J.A.C. 7:8-1.2 shall be submitted to the Soil Conservation District for review and approval in accordance with the requirements of this section and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control.

7:8-5.5 Stormwater runoff quality standards

(a) Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional 1/4 acre of impervious surface is being proposed on a development site. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

Table 1 Water Quality Design Storm

Table 1: Water Quality Design Storm Distribution

Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

(b) For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in N.J.A.C. 7:8-1.3. TSS reduction shall be calculated based on the removal rates for the

BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. Where the Department is not the review agency, a copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the address at N.J.A.C. 7:8-1.3.

(c) If more than one BMP in series is necessary to achieve the required 80% TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$R = A + B – (AXB)/100$

Where

R = total TSS load removal from application of both BMPs, and

A = the TSS removal rate applicable to the first BMP

B = the TSS removal rate applicable to the second BMP

Table 2: TSS Removal Rates for BMPs

Best Management Practice	**TSS %Removal Rate**
Bioretention Systems	90
Constructed Stormwater Wetland	90
Forested Buffers	70
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	See N.J.A.C. 7:8-5.7(c)
Sand Filter	80
Vegetative Filter Strip	50
Wet Pond	60-90

(d) If there is more than one onsite drainage area, the 80% TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.

(e) Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in N.J.A.C. 7:8-5.4 and N.J.A.C. 7:8 -5.5.

(f) Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in N.J.A.C. 7:8-1.3.

(g) In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.

(h) Special water resource protection areas shall be established along all waters designated Category One at N.J.A.C. 7:9B and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC 14 drainage. These areas shall be established for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries significance of those established Category One waters. These areas shall be designated and protected as follows:

1. The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:

i. A 300-foot special water resource protection area, measured perpendicular to the waterway from the top of bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided.

ii. Encroachment within the designated special water resource protection area under (h)1i shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the waterway. All encroachments proposed under this subparagraph shall be subject to review and approval by the Department.

2. All stormwater shall be discharged outside of but may flow through the special water resource protection area and shall comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey", established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq.

3. If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey", established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., then the stabilization measures in accordance with the requirements of the above standards may be placed within the special water resource protection area, provided that:

i. Stabilization measures shall not be placed within 150 feet of the waterway;

ii. Stormwater associated with discharges allowed by this paragraph shall achieve a 95% TSS post construction removal rate;

iii. Temperature shall be addressed to ensure no impact on receiving waterway;

iv. The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;

v. A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and

vi. All encroachments proposed under this section shall be subject to review and approval by the Department.

4. A Stream Corridor Protection Plan may be developed and approved by the Department as an element of a Regional Stormwater Management Plan. If a Stream Corridor Protection Plan for a waterway subject to this subsection has been approved by the Department, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A Stream Corridor Protection Plan for a waterway subject to this subsection shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined above in (h)1i. In no case shall a Stream Corridor Protection Plan allow reduction of the Special Water Resource Protection Area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.

5. This subsection does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before [adoption date of the rule], provided that the construction begins on or before [five years from adoption date of the rule].

7:8-5.6 Calculation of stormwater runoff

(a) Stormwater runoff shall be calculated in accordance with the following:

1. The design engineer shall calculate runoff using one of the following methods:

i. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds; or

ii. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.

2. For the purpose of calculating runoff coefficients, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. A runoff coefficient for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of calculation. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with good cover (if the land use type is woods), or with good condition and conservation treatment (if the land use type is cultivation.)

3. In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.

4. In computing stormwater runoff from a design storm, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate the water quality storm, urban impervious area modifications as described in the NRCS Technical Release-55, Urban Hydrology for Small Watersheds may be employed.

5. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

7:8-5.7 Standards for structural stormwater management measures

(a) Standards for structural stormwater management measures are as follows:

1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).

2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir. In addition,

the design of trash racks must comply with the requirements of N.J.A.C. 7:8-6.2(a).

3. Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.

4. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter.

5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at N.J.A.C. 7:8-6.

(c) Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, ground water recharge and water quality design and performance standards established by this subchapter.

(d) Manufactured treatment devices may be used to meet the requirements of this subchapter, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

7:8-5.8 Maintenance requirements

(a) The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.

(b) The maintenance plan shall contain specific preventative maintenance tasks and

schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

(c) Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.

(d) If the person responsible for maintenance identified under (b) above is not a public agency, the maintenance plan and any future revisions based on (h) below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

(e) Preventative and corrective maintenance shall be performed as needed, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.

(f) The person responsible for maintenance identified under (b) above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

(g) The person responsible for maintenance identified under (b) above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

(h) The person responsible for maintenance identified under (b) above shall retain and make available, upon request by a public entity, the maintenance plan and the documentation required by (g) and (h) above.

(i) Nothing in this section shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

7:8-5.9 Sources for technical guidance

(a) Technical guidance for stormwater management measures can be found in the documents listed at (a) 1 and 2 below, which are available from Maps and Publications, Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.

1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, 2002 as amended. Information is provided on stormwater management measures such as:

i. Bioretention systems
ii. Constructed stormwater wetlands.
iii. Dry wells.
iv. Forested Buffers
v. Extended detention basins.

vi. Infiltration structures.

vii. Manufactured treatment devices.

viii. Pervious paving.

ix. Sand filters.

x. Vegetative filter strip, and

xi. Wet pond.

2. The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended;

(b) Additional technical guidance for stormwater management measures can be obtained from the following:

1. The "Standards for Soil Erosion and Sediment Control in New Jersey" promulgated by the State Soil Conservation Committee and incorporated into N.J.A.C. 2:90. Copies of these standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a) 4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625, 609-292-5540;

2. The Rutgers Cooperative Extension Service, 732-932-9306; and

3. The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a) 4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625, 609-292-5540.

SUBCHAPTER 6. SAFETY STANDARDS FOR STORMWATER MANAGEMENT

BASINS

7:8-6.1 Scope

(a) This subchapter sets forth requirements to protect public safety through the proper design and operation of stormwater management basins. This subchapter applies to any new stormwater management basin.

(b) The provisions of this subchapter are not intended to preempt municipal or county safety requirements for new or existing stormwater management basins. Municipal and county stormwater management plans and ordinances may, pursuant to their authority, require existing stormwater management basins to be retrofitted to meet one or more of the safety standards in N.J.A.C. 7:8-6.3(a), (b) and (c) 1 for trash racks, overflow grates, and escape provisions at outlet structures.

7:8-6.2 Requirements for trash racks, overflow grates and escape provisions

(a) A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management basin to ensure proper functioning of the basin outlets in accordance with the following:

1. The trash rack shall have parallel bars, with no greater than six-inch spacing between the bars;

2. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure;

3. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per

second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack; and

4. The trash rack shall be constructed of rigid, durable, and corrosion resistant material and designed to withstand a perpendicular live loading of 300 lbs./ft sq.

(b) An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, the grate shall comply with the following requirements:

1. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance;

2. The overflow grate spacing shall be no greater than two-inches across the smallest dimension; and

3. The overflow grate shall be constructed of rigid, durable, and corrosion resistant material and designed to withstand a perpendicular live loading of 300 lbs./ft sq.

(c) Stormwater management basins shall include escape provisions as follows:
1. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. Escape provisions include the installation of permanent ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. With the prior approval of the reviewing agency pursuant to N.J.A.C. 7:8-6.4(a), a free-standing outlet structure may be exempted from this requirement;

2. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Safety ledges

shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See N.J.A.C. 7:8-6 Appendix A for an illustration of safety ledges in a stormwater management basin; and

3. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical.

7:8-6.4 Variance or exemption from safety standards

(a) A variance or exemption from the safety standards for stormwater management basins may be granted only upon a written finding by the appropriate reviewing agency (municipality, county or Department) that the variance or exemption will not constitute a threat to public safety.

7:8-6 Appendix A

Illustration of safety ledges in a new stormwater management basin (see N.J.A.C. 7:8-6.3(c) 2). Depicted is an elevational view.

CHAPTER 13

FLOOD HAZARD AREA CONTROL

SUBCHAPTER 2. PROJECT STANDARDS

7:13-2.8 Stormwater management

[(a) Engineering standards for stormwater management are as follows:

1. If a regional stormwater management plan for the watershed containing the watercourse affected by the development has been developed, the applicant shall design the project and its management of stormwater to conform to that regional plan. If no regional stormwater management plan has been developed, any stormwater discharge within the jurisdiction of this chapter shall be controlled so that either:

i. The volume of stormwater discharged from the site and the rate of runoff from the two, 10 and 100 year storm events for the post-construction site conditions does not exceed the pre-construction volume and rate of runoff; or

ii. The post-construction peak runoff rate for the 2 year storm event is 50 percent of the pre-construction peak runoff rate and the post-development peak runoff rate for the 10 and 100 year storm events are 75 percent of the pre-project construction peak runoff rate.

2. The design storms used to achieve the required level of site runoff control described above shall be defined as either the 24-hour storm using the rainfall distribution recommended by the U.S. Soil Conservation Service, or as the total rainfall uniformly distributed throughout the critical storm duration as determined by the Modified Rational Method. A 20 acre drainage area limit shall be used for the Modified Rational Method.

3. For the purposes of choosing runoff coefficients, all lands in the site shall be assumed, prior to development, to be "in good hydrologic condition" if the lands are pastures, lawns or parks, "with good cover" if the lands are woods, or "with conservation treatment" if the land is cultivated, regardless of conditions existing at the time of computation. For land to be considered cultivated, it shall have been used for such purposes uninterruptedly for a period of at least 10 years prior to the time of computation. If such uninterrupted use has not occurred or cannot be satisfactorily documented, woods shall be assumed to be the redeveloped land condition. In computing pre-project

construction runoff, all significant land features, such as ponds, depressions or hedgerows which increase the ponding factors shall be accounted for.

4. The applicant shall provide plans and calculations to the Department which show that the discharge attributable to the proposed project will not cause erosion along the flow path between the outfall and the receiving water body. All storm water discharge paths shall be stabilized in accordance with the criteria in N.J.A.C. 7:13-3.3.]

5. An exemption from the discharge reduction requirements of this section will be allowed for Federal, State, County or municipal highway or road projects that cannot meet the requirement due to limited right-of-way, provided that the applicant demonstrates to the Department's satisfaction that:

i. There is a need for the project which cannot be accomplished by any other means, and

ii. The project has been designed so that stormwater runoff is minimized to the greatest extent possible.

(b) Environmental standards for stormwater management area as follows:

1. Stormwater systems whose discharges come under the jurisdiction of this chapter shall be designed to reduce, to the maximum extent possible, the total suspended solids (TSS) generated by the development for storm events up to the water quality design storm, and to retain as closely as possible the pre-project construction hydrologic conditions on the site.

2. The water quality design storm shall be defined as either 1.25 inches of rainfall falling uniformly in two hours or the one year 24 hour storm using the U.S. Soil Conservation Service type III rainfall distribution. Due to the relatively small amount of rainfall produced by the design storms, a separate and accurate determination of the runoff from

the pervious and impervious areas of the site shall be provided to ensure curve numbers that produce an accurate calculation of peak rate of runoff.

3. Stormwater systems shall be designed so that there is no degradation of water quality in the receiving watercourse. The Department's Surface Water Quality Standards, N.J.A.C. 7:9B, shall be used as guidelines for this determination

(c) Development within the jurisdiction of this chapter shall incorporate land uses and best available technology (such as cluster land development, minimum site disturbance, open space acquisition, use of sheet flow from streets and parking areas, protection of wetlands, steep slopes and vegetation) in their design in order to minimize the volume of stormwater and TSS generated, maintain on-site infiltration, simulate natural drainage systems and minimize the discharge of pollutants to ground or surface waters.

(d) The following list of stormwater management techniques and design conditions identifies some of the techniques available for meeting the requirements of (b) above. The methods are identified as either encouraged or discouraged based on their individual effectiveness. Otherwise, the order of the list does not imply that any one method is favored over another. These techniques may be used, depending on the site conditions and type of development, alone or in combination. Other stormwater management techniques may be used if it can be shown to the Department's satisfaction that they satisfy the requirements of (a) and (b) above.

1. The use of artificial wetlands is encouraged by the Department provided that:

i. Where feasible, the wetlands should be created around a standing pool of water at least 6 feet in depth;
ii. At least one-half of the perimeter of the water area is graded to form a 10 to 20 foot wide shallow bench for aquatic emergents;

iii. The surface area of the artificial wetlands is at least three percent of the total area contributing flow into the artificial wetland;

iv. Vegetation is commercial wetland plant stock, either live plants or dormant rhizomes, instead of transplants from existing wetland areas or seeding;

v. At least two hardy and rapid colonizing indigenous primary wetlands species are planted over 30 percent of the total shallow water area. Each species shall be planted in three or four monospecific stands with individual plants spaced two to three feet apart. Up to three less aggressively colonizing secondary wetlands species shall be randomly distributed in clumps around the perimeter of the marsh; and

vi. At least 25 percent of the total surface area of a basin designed exclusively to act as a shallow marsh is open water with a depth of at least two (2) feet in order to provide habitat for waterfowl and other marsh birds.

2. The use of wet ponds/retention basins is encouraged by the Department provided that:

i. Such basins are not located within the floodway of the watercourse unless they are constructed on-channel except in trout production, trout maintenance and anadromous fish watercourses where such construction is discouraged as it would harm or block the passage of indigenous fish populations;

ii. The volume of the permanent pool is at least three times the volume of the expected runoff from the water quality design storm, or the detention times listed in (a) above are met;

iii. The pool is shallow enough to avoid thermal stratification and deep enough to

minimize algal blooms and resuspension of decomposing organics and other previously deposited materials;

iv. The flow from the contributory drainage area is sufficient in dry weather to maintain the permanent pool during the summer months and prevent stagnation;

v. The configuration of the permanent pool promotes maximum sedimentation and minimizes plug flow;

vi. Where feasible, native fish stock is used to control mosquitoes; and

vii. When discharging into a trout associated watercourse, there are no adverse effects to the fish resulting from differences in temperature between the discharge and the waters in the receiving watercourse.

3. The use of detention basins is encouraged by the Department provided that:

i. The basin is not located within the floodway of the watercourse;

ii. Beginning at the time of peak storage in the basin for the water quality design storm, no more than 90 percent of the total peak storage volume is released over an 18 hour period for residential developments or over a 36 hour period for commercial developments. The rate of release shall be as uniform as possible;

iii. The minimum outlet diameter, width or height is three inches. If this minimum outlet size does not allow for the detention times required in (d)3ii above, then alternative techniques for the removal of TSS prior to discharge into the basin shall be provided; and

iv. The species of native or non-intrusive exotic vegetation used in the basin is approved by the Department and the appropriate County Soil Conservation District;

4. If the Department determines that the techniques noted in (d)1, 2 and 3 above are not feasible or justified, then the use of stabilized, vegetated or biofilter swales is permissible provided that:

i. The water velocity does not exceed two feet per second (FPS) to allow for settlement of TSS during the water quality design storm. The slope shall not be less than 0.5 percent so that positive drainage is maintained. The swale shall be of sufficient length to allow for settlement of TSS taking into consideration the velocity, depth of flow and expected loading of TSS;

ii. Where feasible, vegetation shall be used in the swale to filter out the TSS and to provide a secondary treatment by absorption of pollutants leached into the soil. Vegetation used in the swale shall be native or non-intrusive exotic species approved by the County Soil Conservation District;

iii. If the swale is designed to provide infiltration, the soil texture shall be sand, loamy sand or sandy loam as defined by the U.S. Department of Agriculture and there shall be a minimum of three feet separation between the bottom of the swale and the seasonal high water table;

iv. The swale shall be used internally within the stormwater collection system and in conjunction with other methods such as vegetated filter strips to increase their effectiveness; and,

v. Vegetated swales shall not be used to provide water quality treatment below the final discharge of the stormwater collection system, unless it is shown to the Department's satisfaction that there is no other feasible method of providing for water quality within the site. If the Department allows a vegetated swale below the final discharge, then the

length of the swale shall be maximized to the extent possible under the site conditions.

5. The use of infiltration basins is discouraged because of their high failure rate. However, if the Department determines that the techniques in (d)1, 2, and 3 above are not feasible or justified they will be permitted provided that:

i. There is at least three feet or more vertical separation between the bottom of the basin and the seasonal high water table;

ii. The soil texture is sand, loamy sand or sandy loam as described by the U.S. Department of Agriculture;

iii. No topsoil is placed in the basin;

iv. The basin bottom is scarified after the basin is formed, after which no other construction within the basin may occur;

v. The entire volume of runoff generated by the water quality design storm is contained in the basin and recharged into the ground within 72 hours; and

vi. A backup drainage system is provided to handle the excess flows from the basin in the event of a basin failure.

6. The use of sediment traps and oil/grease separators is strongly discouraged because of their limited capacity and the high degree of maintenance required to keep them operational. However, if the Department determines that there are absolutely no other feasible alternatives, the Department will allow them provided that the drainage areas served are less than one-tenth of an acre in size and the applicant's comprehensive maintenance plan is approved by the Department.

7. The use of porous pavement is discouraged due to problems with maintenance and continued functioning. However, if the Department determines that there are absolutely no other feasible alternatives, the Department will allow its use provided that:

i. The soil beneath the pavement is sand, loamy sand or sandy loam as defined by the U.S. Department of Agriculture;

ii. The porous pavement is buffered with vegetative screening to prevent the intrusion of aeolin sand and silt;

iii. The permittee undertakes a strict maintenance schedule including but not limited to vacuum sweeping on a weekly basis and high pressure water washing on a monthly basis;

iv. The porous pavement is used in light traffic areas subject to automobiles only and is marked by a sign restricting traffic to only passenger vehicles;

v. No asphalt sealer is used; and

vi. No sand is used during periods of snow and ice.

8. The use of underground basins and perforated pipes for the purpose of infiltration is strongly discouraged because of restricted access which discourages proper maintenance. However, if the Department determines that there are absolutely no other feasible alternatives, the Department will allow their use provided that:

i. The soil in the area is sand, loamy sand or sandy loam as defined by the U.S. Department of Agriculture;

ii. Runoff is filtered to remove TSS prior to discharge into the basin or pipe.

(e) Maintenance shall be required as part of all stormwater management plans. Specific maintenance techniques and schedules shall be provided for each type of system used on the site. If maintenance of the system will be the responsibility of a person other than a State, county or municipal agency, then the maintenance plan approved by the Department shall be recorded upon the deed of record for the property.

1. The maintenance plan shall include the name address and telephone number of the party or parties responsible for long term maintenance. Documentation of their assumption of this responsibility shall be submitted to the Department as part of the permit application. The transfer of maintenance responsibility to individual property owners in residential subdivisions is prohibited except through a homeowners association agreement.

2. Written maintenance and repair records for all stormwater management systems shall be maintained for at least five years by the person(s) identified in (e)1 above and shall be provided to the Department upon request.

3. Maintenance of artificial wetlands shall include but not be limited to:

i. Documented visual inspection of all components of the system at least once every six months;

ii. Documented removal of silt, litter and other debris from all catch basins, inlets and drainage pipes at least once every six months or upon noticeable buildup; and

iii. Vegetation removal and replacement at least once a year.

4. Maintenance of detention basins shall include but not be limited to:

i. Documented visual inspection of all components of the system at least once every six months;

ii. Documented removal of silt, litter and other debris from all catch basins, inlets and drainage pipes at least once every six months or upon noticeable buildup;

iii. Documented maintenance, including grass cutting, and necessary replacement of all landscape vegetation within the basin at least once a year;

iv. documented aeration of basin bottoms at least once a year and scraping and replanting at least once every five years to prevent the sealing of the basin bottom.

4. Maintenance of wet ponds/retention basins, located within or discharging to the waters listed in N.J.A.C. 7:13-1.3(a)3i, ii, iii and iv, shall include, but not be limited to annual, documented monitoring of water quality, dissolved oxygen, vegetative growth, temperature and fish population, for a period of three years to ensure that the wet pond/retention basin is working as intended.]

(b) Unless exempt pursuant to (a) above, if a project or activity meets the definition of "Major Development" at N.J.A.C. 7:8-1.2, then the project or activity shall comply with the Stormwater Management rules at N.J.A.C. 7:8.

CHAPTER 15

WATER QUALITY MANAGEMENT PLANNING

SUBCHAPTER 3. PLAN ASSESSMENT, AMENDMENT AND ADOPTION

7:15-3.4 Water quality management plan amendment procedures

(a) (No change.)

(b) Procedures for amendment of the Statewide WQM Plan are as follows:

1. Water quality related provisions in present and future rules adopted by the Department shall be considered to be part of the Statewide WQM Plan. Such provisions may not be adopted, amended, or repealed through the WQM plan amendment process under (b)[5]6 below.

2. Priority systems, intended use plans and project priority lists for wastewater facilities that are developed by the Department and accepted by the United States Environmental Protection Agency (USEPA) pursuant to USEPA regulations, or that otherwise are developed by the Department under N.J.A.C. 7:22, shall be considered to be part of the Statewide WQM Plan. Such priority systems and project priority lists shall be adopted or revised in accordance with USEPA regulations and N.J.A.C. 7:22, as appropriate, and shall not be adopted or revised through the WQM plan amendment process under (b)[5]6 below.

3. Statewide Sludge Management Plans, District Sludge Management Plans and sludge management rules that are promulgated or approved by the Department pursuant to N.J.S.A. 13:1E-1 et seq. shall be considered to be part of the Statewide WQM Plan. Such plans and rules shall be promulgated, revised, updated or approved in accordance with N.J.S.A. 13:1E-1 et seq., and shall not be promulgated, revised, updated, or approved through the WQM plan amendment process under (b)[5]**6** below.

4. Lists of water quality limited segments, lists of segments where TMDLs will be

developed, and project priority lists for TMDL development which are developed by the Department under N.J.A.C. 7:15-6 shall be adopted as amendments to the Statewide WQM Plan. TMDLs developed in accordance with N.J.A.C. 7:15-7 shall be adopted as amendments to the relevant Areawide WQM Plan(s). However, such lists, and TMDLs shall be adopted or revised in accordance with N.J.A.C. 7:15-6 or 7:15-7, as appropriate, and shall not be adopted or revised through the WQM plan amendment process under (b)[5]6 below. The Department may also publish a draft amendment as an Interested Party Review document or as a pre-proposal prior to formal proposal of the amendment.

5. A regional stormwater management plan prepared in accordance with N.J.A.C. 7:8-3 shall be submitted only by a Lead Planning Agency as a proposed amendment to the applicable areawide WQM plan. In addition, the following changes to an adopted regional stormwater management plan shall be processed as amendments to applicable areawide WQM Plans under this section:

i. The addition, deletion or modification to any of the drainage area-specific water quality, ground water recharge or water quantity objectives identified under N.J.A.C. 7:8-3.5;

ii. The addition, deletion or modification to any drainage area-specific design or performance standard developed under N.J.A.C. 7:8-3.6;

iii. Any modification to a regional stormwater management plan that the Department or designated planning agency determines is likely to have a significant environmental, social, or economic impact; or

iv. Any modification that the applicant requests be processed as an amendment.

[5]**6**. Components of the Statewide WQM Plan other than (b)1 through [4] 5 above

may be amended by using the procedure specified in (g) below, except that the Commissioner shall render the final decision identified in (g)9 below.

(c)-(f) (No change.)

(g) Except as provided in (h) below, the Department procedure for amendment of areawide WQM plans is as follows:

1. – 2. (No change.)

3. The Department shall notify the applicant and the applicable designated planning agency, if any, in writing of its decision under (g)2 above. If the Department's decision is to proceed further with the amendment request under (g)2iii above, then this notification shall include the public notice that shall be given for the proposed amendment. <u>If the proposed amendment is a regional stormwater management plan, the Department shall also notify the Department of Community Affairs and the Department of Agriculture.</u> The applicant shall request written statements of consent under (g) 4 below, and shall give public notice by publication in a newspaper of general circulation at the applicant's expense. The Department shall maintain a list identifying the newspaper that shall be used for this purpose in each planning area. The public notice shall also be published in the New Jersey Register. In cases where such Department decisions include a requirement for a non-adversarial public hearing, the public notice shall provide at least 30 days notice of the hearing.

4.-11. (No change.)

(h)-(l) (No change.)

7:15-3.5 Water quality management plan review, revision, and certification

(a) (No change.)

(b) The Department and the designated planning agencies shall prepare revisions to Statewide and areawide WQM Plans under this section whenever such revisions are necessary to:

1. - 2. (No change.)

3. Revise schedules for submission of wastewater management plans under N.J.AC. 7:15-5.23(g); [or]

4. Provide for the following substantive changes in Statewide and areawide WQM plans where the Department determines no significant individual or cumulative impacts will occur to environmentally sensitive areas or other natural resources (such as water supplies) due to the proposed revision (individually or in combination with past revisions in the area), that the changes are consistent with N.J.AC. 7:15-3.6 and 3.7, and that certain directly affected municipal and county agencies and other interests as identified by the Department have been provided an opportunity to review and comment on the proposed revision:

i. - iv. (No change.)

v. Expansion of a future sewer service area to contiguous lots, where the expansion involves less than 100 acres, contributes less than 8,000 gallons per day of additional wastewater flow, and does not create a significantly new pattern of sewered development such that a significant potential or incentive is created for additional revisions or amendments to open new areas to sewered development[.]; or

5. Provide for any modification in an adopted regional stormwater management plan that does not require an amendment under N.J.A.C. 7:15-3.4(b)5.

(c) - (f) (No change.)

CHAPTER 20

DAM SAFETY STANDARDS

SUBCHAPTER 1. APPLICATION PROCEDURE; DESIGN CRITERIA FOR DAM CONSTRUCTION; DAM INSPECTION PROCEDURE

7:20-1.3 Permit-by-rule

(a) All dams must be designed, constructed, operated, maintained or removed in compliance with the rules in this subchapter except as set forth below:

1. Owners and operators of Class IV dams (see N.J.A.C. 7:20-1.8), Dam classification) are not required to file documents with nor obtain a permit from the Department, but must meet the following requirements, in addition to those set forth elsewhere in this subchapter:

i. (No change.)

ii. All necessary local approvals must be obtained; [*and*]

iii. A New Jersey licensed professional engineer must design the Class IV Dam to meet all technical requirements of this subchapter; and

iv. If the Class IV dam is designed or constructed for stormwater management purposes, the dam shall comply with the Stormwater Management Rules at N.J.A.C. 7:8.

2. (No change.)

(c) - (c) (No change.)

Based on consultation with staff, I hereby certify that the above statements, including the Federal Standards Analysis addressing the requirements of Executive Order 27 (1994) (p. 43) permit the public to understand accurately and plainly the purpose and expected consequences of this proposed repeal and repromulgation. I hereby authorize the proposal of this repeal and repromulgation.

Bradley M. Campbell,
Commissioner